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ABSTRACT

This study investigated the effectiveness of an after-school program to improve and accelerate the academic achievement and English oral language proficiency of limited-English-proficient (LEP) fifth-grade children at one school. The program offered one hour of after-school academic instruction in sheltered English to Hispanic students; from these, an experimental group of 30 was established. Instruction was designed to expand on students' existing knowledge and experience, promote peer tutoring and interaction, and use active learning concepts. Results show that after 6 months of the program, all experimental group children had increased their scores on standardized oral proficiency and basic skills tests. In addition, the children increased their national curve equivalent scores and grade equivalent levels at a much greater rate than the norming group. It is concluded that this approach is an effective strategy for improving LEP student achievement. Contains 15 pages of references. (Author/MSE)

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ED 394 287

ACCELERATING ENGLISH LANGUAGE AND ACADEMIC ACHIEVEMENT THROUGH AN AFTER-SCHOOL ENHANCEMENT PROGRAM

A DISSERTATION
Presented to the
Faculty of the University of Sarasota

In Partial Fulfillment of
the Requirements for the Degree of
Doctor of Education

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ACCELERATING ENGLISH LANGUAGE ACQUISITION AND ACADEMIC ACHIEVEMENT THROUGH AN AFTER-SCHOOL ENHANCEMENT PROGRAM

A Dissertation

Submitted to the
Faculty of the University of Sarasota
in partial fulfillment of
the requirements for the degree of
Doctor of Education

by

Rock D. Moore

University of Sarasota

Sarasota, Florida

January, 1996

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Abstract of Dissertation Presented to the Graduate School of
the University of Sarasota in Partial Fulfillment of the
Requirements for the Degree of Doctor of Education

ACCELERATING ENGLISH LANGUAGE ACQUISITION AND ACADEMIC ACHIEVEMENT THROUGH AN AFTER-SCHOOL ENHANCEMENT PROGRAM

By

Rock D. Moore

January, 1996

Chairperson: Dr. Marilyn Highland
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Dr. Carl Davis

Major Department: Human Services

This study was conducted to measure the effectiveness of an after-school enhancement program that took place at Juniper Elementary School, in Fontana, California. The program was initiated to improve and accelerate the academic achievement and English oral language proficiency of LEP Hispanic fifth grade students. Thirty LEP Hispanic students (15 girls and 15 boys ages nine to eleven) were selected randomly from the attendance list of the seventy students who had enrolled. These thirty students became the study group for this research.

The design implemented allowed for a voluntary one hour after-school enhancement program. These students were given academic instruction in a contextualized environment that provided English language instruction along with a hands-on

learning environment. The after-school program employed recent research on accelerated language learning, constructionist theory, instructional discourse and active teaching strategies.

The research was constructed as a one-group pretest/posttest design with an artificial control group. Successful attainment of academic achievement and English proficiency was appraised by evaluating the pre/post test results of the Idea Oral Proficiency Test (IPT) and the Comprehensive Tests of Basic Skills (CTBS). Comparisons of the test results were also made with the national norm group. The data obtained from the test was processed through the SPSS Release 4.1 program for IBM computers. A one-tailed t-test was conducted on the results. A .05 levels of significance were chosen as the level of probability to accept the four hypotheses.

Upon completion of the six-month implementation period the results showed 100 percent, or 30 out of 30 students increased their scores on the IPT and CTBS.

The analysis of data supported Hypothesis One that there would be a significant increase in English oral language proficiency. The analysis of data supported Hypothesis Two that there would be a significant increase in reading comprehension. The analysis of data supported

Hypothesis Three that there would be a significant increase in English language mechanics. The analysis of data supported Hypothesis Four that there would be a significant increase in total math scores. The analysis of data also demonstrated that the students in the after-school program increased their National Curve Equivalents (NCE) and Grade Equivalent (GE) levels at a much greater rate than those students in the norming (artificial control) group.

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CHAPTER I

THE PROBLEM AND ITS COMPONENTS

This research utilized quantitative techniques to investigate and evaluate an after-school intervention for Limited English Proficient (LEP) fifth grade Hispanic students.

Chapter I presents the background of the study, its significance and purpose, and the research questions addressed.

Chapter II delineates a review of the relevant literature to the theoretical and practical assumptions of this investigation. The literature on constructionist, instructional discourse, action teaching, and second-language acquisition were reviewed.

Chapter III outlines the methodological framework of this intervention. It describes the quantitative techniques used in the data collection and analysis.

Chapter IV presents the findings and discussion of this intervention. Quantitative findings were reported for each of the four hypotheses.

Finally, Chapter V provides the conclusions and implications of this study. It also provides recommendations for teachers, administrators, and those involved in training pre-service teachers in institutions of higher learning.

Statement of the Problem

For elementary students in the public schools to be successful in the United States, they must be proficient in their use of English. Such proficiency must include mastering receptive (comprehension/reading) and expressive (speaking/writing) skills. These skills need to be demonstrated on both an academic and conversational level, appropriate for their age group. Without academic success in the elementary grades, there will be no foundation upon which these students can build their future.

Limited English Proficient (LEP) Hispanic students are especially vulnerable. Much of what is done in formal teaching and learning requires effective communication of specific facts, concepts, ideas, and problem solving strategies. For the LEP student, this is a formula for failure. Without strong communication and comprehension skills in English, no matter how intellectual the student may be, the lack of the ability to respond adequately results in academic failure (Moore, 1993, p. 6).

In May of the 1994/95 school year, an after-school program was authorized at Juniper Elementary School in the Fontana Unified School District (FUSD), Fontana, California. The intent of the after-school intervention was to increase and accelerate second-language acquisition. It was surmised that increasing the students' ability to comprehend and respond in English would reflect higher academic achievement in all content areas.

Problem Background

Low academic achievement by Hispanic students in the elementary grades continues to increase in California (California Basic Educational Data and Statistics, 1993). There are many factors that contribute to this problem. Hamayan and Damico's (1991) research found that Hispanic LEP students were usually located in environments that were not conducive to language diversity. Additionally, teachers were unlikely to have knowledge of the students' first language or even the process of second language acquisition. Within this environment, Ogbu (1978) found prejudice toward students who were speakers of other languages. Many of these students were not born in the United States and were usually regarded as being inferior (Banks, 1995). As a result, these students were perceived as less intelligent, less motivated, and less able to match the English-only students in reading, writing, and language proficiency (Cummins, 1986). These perceptions

> ...give rise to lowered expectations and frequently result in a disempowerment that is manifested not only in academic performance but in ways that the students perform and are evaluated during assessment (Moore, 1993, pp. 8-10).

A primary concern of the State of California, San Bernardino County, and the Fontana Unified School District, was the failure rate of Hispanic students in developing oral English language proficiency and learning how to read and write. Without these abilities, the Hispanic student will not stay motivated to develop adequate academic skills in English. Without some academic success in the early grades, there will be no foundation upon which these LEP Hispanic students can build. Subsequently they will drop out of school (Kaufman and Frase, 1990).

Dropout Rates

A major indicator of academic success in the United States is the completion of high school. Hispanic students have the highest national dropout rate. From 1987 to 1989, about 8 percent of Hispanic students dropped out of school each year. This rate was twice as high as that of white students. In 1989, among the population aged 16 to 24, only 67 percent of Hispanics have completed high school or its equivalency, as opposed to 88 percent of white students (Kaufman and Frase, 1990). This data indicates that high school completion rates were even lower in central cities and metropolitan areas, which tend to have the highest concentration of Hispanics (Kaufman and Frase, 1990).

In California, the state average dropout rate was 22.7 percent. San Bernardino county's dropout rate was higher at 28.1 percent, however, the dropout rate for Hispanics in FUSD was 35.1 percent (California Basic Educational Data and Statistics, 1994). Calabrese (1988) points out that the dropout rate for Hispanic students was one out of three.

Academic Success

The National Center for Educational Statistics (NCES, 1991) did research to determine how Hispanic students performed in school. The data focused on grade-level achievement from 1983 to 1989. The research assessed the relative number of students who were not achieving at the academic level considered normal for their age, which is called "the modal grade level." Table 1.1 and 1.2 summarizes these data by showing the percentage of 8-year-olds (1.1), and 13-year-olds (1.2), who were performing one or more years below the expected grade level.

For 8-year-olds, the percentage of students below modal grade level for Whites and Hispanics was about equal. By the age of thirteen, the discrepancy became quite significant (28.8 versus 40.3). The result was that 40 percent or more of the Hispanic students were one grade level or more below expected and normal achievement levels by the eighth grade (National Center for Educational Statistics, 1991).

Table 1.1

Percentage of 8-year-old White and Hispanic Students Performing One or More Years Below Modal Grade Level

Year	White	Hispanic
1984	20.1	n/a
1985	21.1	26.6
1986	22.0	22.8
1987	23.0	24.2
1988	24.5	25.0

Note. "U.S. Department of Education, National Center for Educational Statistics," 1991. *The Condition of Education,* Vol. 1 p. 123.

Table 1.2

Percentage of 13-year-old White and Hispanic Students Performing One or More Years Below Modal Grade Level

Year	White	Hispanic
1983	26.7	46.9
1984	24.5	39.5
1985	24.7	44.0
1986	25.9	43.8
1987	28.6	39.6
1988	26.8	41.6
1989	28.8	40.3

Note. "U.S. Department of Education, National Center for Educational Statistics," 1991. The Condition of Education, Vol. 1 p. 123.

Changing Demographics

Current statistics show that California has a growing number of language minority public school students (California Basic Educational Data and Statistics, 1994). Enrollment of language minority students in San Bernardino County had increased by 25 percent over the previous year. This represented the highest growth rate of any county in the State of California. Within the county, FUSD experienced a substantial increase in its Limited English Proficient (LEP) students.

FUSD, which serves students in kindergarten through the twelfth grade, is located in San Bernardino County. This is the largest and fastest growing county in the United States in terms of population. The massive growth of denizens in the county is attributed to the availability of affordable housing that is scarce in nearby Los Angeles and Orange Counties (Fontana Bilingual Assessment Center, 1995).

Most of the students coming into FUSD are from Mexico. The test scores of these students (results on the Idea Oral Proficiency Test [IPT] and the California Tests of Basic Skills [CTBS]) clearly suggest that the majority of them lack basic skills associated with literacy and proficiency in their native language (California Basic Educational Data and Statistics, 1993). The native languages of these students vary from Spanish to dissimilar Indian dialects spoken in the remote areas of Mexico and South America (Fontanta Bilingual Assessment Center, 1995).

The district's State ranking by enrollment of LEP students in the Spring of 1993 was 48th out of 1021 districts (California Basic Educational Data and Statistics, 1994). The county of San Bernardino ranks fifth in the State for the total LEP students; FUSD ranks third in the county for the total LEP students being served.

The district's percent of Aid For Families With Dependent Children was 21.11 percent (California Basic Educational Data and Statistics, 1994). It was estimated that 31 percent of FUSD's students benefited from Chapter One funds. The number and proportion of low-income families in the elementary grades show 75 percent of the students receive free or reduce-fee lunches.

Spanish-speaking children constitute the district's largest overall language minority at approximately 97 percent. Spanish-speaking students also represent the highest percentage of LEP students enrolled in FUSD schools.

Student enrollment in the district had increased at a rapid pace. The current district enrollment is 29,688 (California Basic Educational Data and Statistics, 1994).

Long-range projections suggest that the district will grow by an additional 20,000 students by October 1999.

FUSD currently serves students who reside in the City of Fontana, parts of Bloomington, and Rialto. The city is located approximately 50 miles east of Los Angeles and 100 miles north of San Diego and the U.S. Border with Mexico. FUSD is located in an area that contains a large proportion of low-income housing units that tend to attract transient families. The majority of these families are Spanish-speaking and are not able to expose their children to English at home. Many parents also find it difficult to reinforce the school's values and priorities because of economic constraints (Fontana Bilingual Assessment Center, 1995). Since 1988, approximately one-third of all new district enrollees has been identified as language minority students. Therefore, during the past four years, 800 more students have needed bilingual instruction each year, as shown in Table 1.3.

In the last four years, FUSD's new enrollment has included 3,965 immigrants from 43 countries. The majority of these families came from Spanish-speaking countries. The breakdown of families and countries is shown in Table 1.4.

Table 1.3

Limited English Proficient Student Enrollment 1986-1994

Year	LEP Enrollment	New LEP	New Arrived LEP	Total FUSD Enrolled
1986	346	-	-	15,960
1987	437	91	-	17,580
1988	751	314	-	19,727
1989	1,162	411	-	22,173
1990	1,735	573	68	24,521
1991	2,700	956	1,218	27,043
1992	3,702	1,002	1,300	28,798
1993	4,160	458	1,447	27,679
1994	4,726	732	831	29,688

Note. "California Department of Education," 1994. *California Basic Educational Data and Statistics.*

Table 1.4

Spanish Speaking Families Enrolled in Fontana Unified School District

Country of Origin	Number of Families
Argentina	2
Bolivia	3
Chile	1
Columbia	8
Costa Rica	5
Dominican Rica	4
El Salvador	39
Guatemala	31
Honduras	11
Mexico	1,168
Nicaragua	39
Panama	2
Peru	10
Philippines	36
Spain	1

Note. "California Department of Education," 1994. California Basic Data and Educational Statistics.

The district R-30 State Report of LEP students indicated a 260 percent growth in the number of LEP students from 1988-90. The R-30 is a documentation procedure required by the State of California within thirty days of the student's enrollment. The intent of the R-30 is to assure that the student is given proper instruction in a language understandable to them (Dr. J. Smith personal communication, June 15, 1994). Thus, the number of LEP students in the district nearly tripled in two years. With an LEP enrollment of 4,728 students, in March 1994, FUSD ranked third in the county. Currently, language minority students represent 21 percent of the total elementary student enrollment. These figures are expected to increase consistently each year.

Assessment Methods Used for Pre-Enrollment Procedures

When these new Spanish speaking students enroll in the district, the parents are required to complete a Home Language Survey. The survey contains four questions:

1. What language did your son or daughter learn when they first started to talk?
2. What language does your son or daughter most frequently use at home?

3. What language do you use most frequently to speak to your son or daughter?
4. Name the language most often spoken by adults at home.

The Home Language Survey has been found reliable and objective after its fifteen years of use, according to Smith (personal communication, June 15, 1994).

If answers on the Home Language Survey indicate a language other than English, the school is required to proceed to the next step. This step is the administration of the Idea Oral Language Proficiency Test (IPT). The IPT is a State-approved, normed testing instrument, which can determine the level of English oral proficiency. The IPT ranks the student on a number scale from 1-83, the level of expected proficiency varying slightly depending on the grade level. The student must score a 65 or higher on the IPT to be considered English proficient (Fontana Bilingual Assessment Center, 1995).

The California Test of Basic Skills (CTBS) in either English or Spanish is used to measure academic skills, particularly reading comprehension, language mechanics, and math. Non-native English speaking students, scoring below the 36th percentile in English, are classified Limited English Proficient (LEP). All students who complete the test in Spanish and finish below the 36th percentile are classified as Non-English Proficient (NEP).

Purpose of the Study

The essence of this analysis was to evaluate an archetype framework designed to avert the continued academic failure of Hispanic students. A determination had been made by both FUSD and this researcher to design a model that accelerated second-language acquisition and academic achievement. The plan created a voluntary one hour after-school enhancement program for LEP Hispanic fifth grade students.

These students were given academic instruction in a contextualized environment that provided English language instruction along with a hands-on learning ambience. The after-school program utilized recent research on accelerated language learning, constructionist theory, instructional discourse and active teaching strategies. By using these modes of teaching concurrently, it was postulated that after six months, the Hispanic students would show a significant increase in both academic and oral English skills.

Research Questions/Hypotheses

General

It was hypothesized that by using the principles of accelerated language acquisition, constructionist theory, instructional discourse and active teaching strategies in the one hour after-school enhancement program for six months, LEP Hispanic fifth grade students (ages nine to eleven) would show an increase in levels of oral language proficiency (increased oral English comprehension, verbal expression, and syntax articulation) and academic achievement (English reading comprehension, English language expression, and total math scores) as measured by the Idea Oral Language Proficiency Test (IPT) and the California Test Of Basic Skills (CTBS).

Specific

The specific research questions focused on the amelioration and effectiveness of teaching LEP Hispanic fifth grade students for six months in the after-school enhancement program. The research tested the following four hypotheses:

1. There would be a significant increase in English oral language proficiency after the six-month after-school intervention ($p<.05$).
2. There would be a significant increase in reading comprehension after the six-month after-school intervention ($p<.05$).
3. There would be a significant increase in English language mechanics after the six-month after-school intervention ($p<.05$).
4. There would be a significant increase in total math scores after the six-month after-school intervention ($p<.05$).

In addition, the analysis of the pre/post test results was evaluated to appraise the growth of the students during the intervention with the national norming group.

The final uses of the scores equated the students' previous results (of the CTBS) over the last four years with their current testing levels. The comparison evaluated the scores to assess significant change regarding previous and present GEs and NCEs after the posttest (Appendices D-G). Consequently, "one case in which pre/post designs are useful is when scores are known to have been stable for a long time. If no other major changes occurred during the same year, it can be argued that it was the program introduced that made the difference" (Slavin, 1992, p. 35).

Definitions

Action Research: "Its main purpose is to solve classroom problems through the application of the scientific method. It is concerned with a local problem and is conducted in a local setting. The primary goal of this research is the solution of a given problem associated with a classroom or a school" (Gay, 1996, p. 10).

Acquired Language (L2): "Second or targeted language being acquired by non-English speaker" (Hulstijn and Matter, 1991, pp. 75-81).

Affective Filter: "A construct developed to refer to the effects of personality, motivation, and other affective variables on second language acquisition. These variables interact with each other to lower the affective filter. It is hypothesized that when the filter is high, the L2 acquirer is not able to adequately process comprehensible input" (Young, 1990, pp. 539-553).

Basic Interpersonal Communicative Skills (BICS): "A construct originally developed by James Cummins to refer to aspects of language proficiency strongly associated with the basic communicative fluency achieved by all normal native speakers of a language. Basic Interpersonal Communicative skills are not highly correlated with literacy and academic achievement. Cummins has further refined this notion in terms of cognitive undemanding contextualized language" (Cummins, 1992, pp. 14-15).

Cognitive/Academic Language Proficiency (CALP): "A construct originally proposed by James Cummins to refer to aspects of language proficiency strongly related to literacy and academic achievement. Cummins has further refined this notion in terms of cognitive demanding decontextualized language" (Cummins, p. 15).

Comprehensible Input: "A construct developed to describe understandable and meaningful language directed at L2 acquirers under optimal conditions. Comprehensible L2 input is characterized as language which the L2 acquirer already knows (i) plus a range of new language (i+1), which is made comprehensible in formal schooling contexts by the use of certain planned strategies. These strategies include but are not limited to: (a) focus on communicative content rather than language forms: (b) frequent use of concrete contextual referents; (c) lack of restrictions on L1 use by L2 acquirers, especially in the initial stages; (d) careful grouping practices; (e) minimal overt language form correction by teaching staff; and (f) provision of motivational acquisition situations" (Office of Bilingual Bicultural Education, 1992, p. 215).

Constructionist Perspective : "The belief that for humans, knowing is a result of continual building and rebuilding" (Garcia, 1994, p. 94).

Fluent English Proficient (FEP): Student scores above the 36 percentile on the CTBS Form U or V in areas of reading and language mechanics. Student must concurrently score 65 or higher on the IPT. Both requirements must be met before student can be redesignated from LEP to FEP.

Grade Equivalents (GE): "GE represents the grade and month in school of students in the norming group whose test performance is theoretically equivalent to the test performance of a given student" (CTB/McGraw-Hill, 1988, p. 8).

Instructional Discourse: "A teaching strategy that emphasizes discussion in the classroom. Also called instructional conversation" (Garcia, 1994, p. 286).

Language Development Specialist (LDS): A specialist credential endorsement attached to a California Teaching Certificate for a multiple subject teacher. The holder possesses the ability to instruct non-native students with creative techniques that promote language acquisition and comprehension without using the students' native language. The teacher also understands the culture of the groups that are specifically assigned to their classroom.

Learning Logs: Journal writing in which students explain how they understand or arrive at a concept or problem in their own words.

Limited English Proficient (LEP): "Individual that is limited in English proficiency and depending on the level of understanding in English, must have academic subjects taught in the primary language. The more a LEP student comprehends English, a transition to a Sheltered English Format can be established" (Krashen, 1992, pp. 36-40).

Monitor: "A construct developed to refer to the mechanism by which L2 learners process, store, and retrieve conscious language rules. Conscious rules are placed in the Monitor as a result of language learning. In order to effectively use the Monitor, L2 users must: (1) have sufficient time to retrieve the desired rule, (2) be involved in a task focused on language forms and not on language functions, and (3) have previously learned correctly and stored the rule. These three conditions are rarely present in normal day-to-day conversational contexts" (Office of Bilingual Bicultural Education, 1992, p. 217).

Normal Curve Equivalents (NCEs): "NCEs are represented on a scale of 1-99 with a mean of 50 and a standard deviation of approximately 21. The NCEs obtained by different groups of students on the same test or test battery may be averaged for the purpose of making comparisons" (CTB/McGraw-Hill, 1988, p. 9).

One-Tailed Test of Significance: "A test of a directional hypothesis in which the possibility that the results will come out in a direction opposite to that hypothesized is ignored" (Slavin, R., 1992, p. 250).

Primary Language (L1): "First language of individual" (Hulstijn and Matter, 1991, pp. 75-81).

Quantitative Research: "Research in which numeric data are collected and statistically analyzed" (Slavin, R., 1992, p. 251).

Quasi-Experimental Research: "To approximate the conditions of the true experiment in a setting that does not allow the control and/or manipulation of all relevant variables. The researcher must clearly understand what compromises exist in the internal and external validity of his design and proceed within these limitations" (Issac and Michael, 1990, p. 54).

Sheltered English: "A step by step process which communicates meaning in a subject area while students acquire additional English usage and vocabulary" (Northcutt, 1986).

Stanines: "Standard score related to a scale of nine units" (CTB/McGraw-Hill, 1988, p. 7).

Delimitations

The after-school program was implemented in two classrooms at Juniper Elementary School, Fontana California. Each classroom held four one-hour sessions each week, Monday through Thursday. The two classrooms were located on separate parts of the campus. One classroom was located in a portable building adjacent to the playground. The second classroom was a part of the main campus wing.

The Hispanic LEP fifth grade students involved in the enhancement program were classified as LEP and had been administratively promoted for a minimum of two years. Although the curricula, goals, class settings and daily activities were designed to be the same for both classrooms, differences in delivery styles of each teacher did occur. These differences were not considered deliberate or substantial in influencing total student outcomes. The extent to which student achievements of instructional goals were affected by teacher practices or characteristics are not a part of this research. Thus,

1. The study was delimited to two classroom settings in the FUSD in Southern California.
2. The study was delimited to three Language Development Specialist teachers.
3. The study was delimited to 30 LEP Hispanic fifth grade students.
4. The intervention was delimited to 96 meetings (4 times a week x 24 weeks)for 60 minute periods.

Limitations

Since "sample selection is much easier in action research because the researcher is usually interested in generalizing only to a small accessible population such as a specific grade level at the school in which they are employed" (Schumacher, 1991, p. 23); two classrooms, at the site of the researcher, at Juniper Elementary school, were selected for the after-school program. Because the project was voluntary, the number of individuals at each site varied. FUSD randomly selected 15 Hispanic LEP fifth grade students from each site to be tested (15 x 2 = 30 subjects total) from a population of 70. Therefore,

1. The study was limited by the number of subjects tested (30).
2. The study was limited by the number of schools and school districts involved (1).
3. The results are inferable only to the LEP fifth grade students at Juniper Elementary School who participated in the study.

There was no attempt in this research to establish any linkage between cause and effect. Because, "behavioral science and research does not offer certainty, neither in fact does natural science. It does not even offer relative certainty. All it offers is probabilistic knowledge" (Kerlinger, 1979, p. 28). Likewise, "research can never tell us that something is so certain that no doubts exist at all" (Schumacher, 1992, p. 13).

This was an action research design in which the author made every attempt to obtain an unbiased sample of the population of Hispanic LEP fifth graders being studied. This research examined the results of an after-school enhancement program on a specific Hispanic fifth grade population. The research does not imply a generalization that the interventions and strategies evaluated would work with all Hispanics populations in all circumstances. According to Gay (1996), "Action research normally is not concerned with generalizing results beyond the local school district, and in many cases is concerned only with a single group or a few classrooms" (p. 284).

This inquiry was undertaken after an analysis of current research (e.g., Garcia, 1994; Krashen, 1980, 1985, 1994, Cummins, 1986, 1992, etc.), showed that plausible solutions existed for addressing the Hispanic students' academic failure in school. Chapter II is a composite of the literature of professional education, the literature dealing with legislation as it affects the education of Hispanics, and literature dealing with current strategies and methodologies that affect in an explicit way, the educational outcomes of Hispanic students.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to review the literature dealing with the education of LEP Hispanic students. This included previous research on successful studies conducted in various locations throughout the United States and the foundational components that make up the framework of this intervention design.

Monitoring Academic Progress

Federal mandates and many state regulations and laws require that appropriate measures of oral language proficiency be administered to students whose primary language is other than English. "One of the original concerns that led to bilingual education, was the alarmingly high dropout rate among minority students" (Hakuta, 1990, p. 211). The intent of the mandates and legislation is to monitor the progress being made by non-English proficient students, to make sure that they are making reasonable academic progress. This academic progress needs to be accomplished, although the primary language of the student is not the medium of instruction.

The lack of English proficiency is the major cause for the LEP student's academic failure (Mercer, 1994). Bilingual education is intended to ensure that students do not fall behind in subject matter content while they are learning English (United States Commission on Civil Rights, 1975). A student who is not developing oral proficiency in English and lacks the ability to comprehend and verbally respond in his/her second language may not be successful. Listening and speaking skills need to be developed adequately to insure that the LEP student will not be hampered in acquiring cognitive skills to succeed in the second language.

Second-Language Acquisition Research

It has been well documented that the average language minority student will not succeed academically in the public school system as well as their Anglo peers (Moret, 1993). The rationale behind this belief is that children cannot learn in a language that they do not understand. California statistics have shown that by the time an LEP student reaches the sixth grade, his/her performance will be two to three grade levels below the national norms on the subject matter achievement test (California Basic Educational Data and Statistics, 1992).

Research in second language acquisition has grown rapidly and extensively over the last ten years. For example, speaking and reading are now considered the two most important skills for LEP learners in an academic context (Lynch and Hudson, 1991).

Most second language researchers agree that vocabulary acquisition and reading comprehension are critically related to each other. Barnett (1988) and Strother and Ulijn (1987) have positively identified and demonstrated that vocabulary is an important predictor of future academic success. First language learners have vocabularies between 5,000 and 7,000 words before they enter school. Second language students, on the other hand, do not enter school with this vocabulary base, or an understanding of basic English grammar (Eskey, 1990). In addition, second language students cannot rely on phonological decoding strategies as first language learners can.

Accelerating English Language Proficiency

Recent research has redefined how a second language is acquired. The emphasis is not on the language to be learned, but on the student and the role of both the environment and the facilitator. Wong-Fillmore (1991) found that English proficiency among Hispanic students was significantly enhanced when interaction with English speaking students was necessitated by the classroom situation.

This research suggests that those who learned English more rapidly than others, allowed themselves to be in activities and conversations where they did not comprehend everything going on around them, but exposed themselves to the English only input. These same students would then try to answer questions by whatever skills and means that they had acquired to communicate. This process influenced the English speakers to help the LEP student become more involved in the conversation and activities, which accelerated the language acquisition process.

Language Acquisition

Contemporary trends in language research and how they relate to second language acquisition are an expanding field of study. In 1957, N. Chomsky's research in language acquisition led to a new look at the prevailing beliefs on how language is learned. It had been accepted by many educators that language is learned through a system of imitation and memorization (Fodor, Bever, and Garret, 1984). In Syntactic Structures (1965), Chomsky felt that the force which drives language acquisition is a learner's language mental disposition. His premise was that by exposing a student to language, the language acquisition device (LAD) is triggered, which provides the individual with the ability to acquire a language. Thus,

> Linguistic inputs, like sensory inputs, are integrated and interpreted in light of memories and current nonverbal experience. If this is so, then the production and comprehension of speech involve translating between this central code and a natural language (Fodor, Bever, Garret, 1984, p. 378).

Language starts as a means of communication. It progresses from what is known to the unknown. Comprehension and production follow the sequence of single words, phrases, and then sentences. The next stage in language is incremental. As a person comes in contact with the environment and experiences it, the language expands.

The ensuing stage of language acquisition is systematic. The language is regulated by socially accepted grammatical and syntactic rules and standards. C. Chomsky's

(1969) and Menyuk's (1991) research concluded that the child's acquired set of rules applied to all grammatical structures, until schooling exposes the student to other or new socially approved rules and standards.

The following stage in language development is symbolic. As a student is exposed to new experiences (either by first hand or vicariously through stories, readings, movies, or television) the student learns, reflects, relates, and stores these experiences into their personal corpus of knowledge. If an experience is not new or not understood, it will not be stored into the student's repertoire, resulting in mis-communication, and errors can ensue. Menyuk's (1991) research found that if a lexical item is used in a context that is congruent with a student's perception or expectation, then comprehension takes place.

An advanced stage of language development concerns itself with communicating socially. Language is not learned in a vacuum; there is one who sends and one who receives. Without a similar reality and perception between interlocutors, communication will not take place.

Second Language Acquisition

Cummins (1992) makes many assumptions about accelerating a non-native English speaker's ability to acquire another language. One of the assumptions is that high levels of primary language proficiency promote academic achievement in the second language being learned.

Cummins' (1984, 1992) research indicates that there is a strong interdependence of literacy-related or academic skills across languages. In other words, the better developed a student is in the first language (L1), similar conceptional abilities will be developed in the second language (L2). This positive relationship between L1 and L2 helps to develop everyday language that Cummins calls Basic Interpersonal Communication Skills (BICS).

As the student's BICS development increases, the level of cognitive academic skills in reading, math, and science is also developed. The more that a student has comprehension of written language as found in textbooks and in other classroom materials that demands deeper cognitive ability and language comprehension, the potential for Cognitive Academic Language Proficiency (CALP) is increased. As this development occurs, more of the second language (L2) is encouraged and less of the native language (L1) is taught in the classroom.

Differing Characteristics in Acquiring L1/L2

Some important differences exist between the context in which all children acquire a first language and those who learn a second one. The first language is usually acquired in the home setting, whereas a second language is often learned in a classroom environment. Furthermore, first-language acquisition begins during infancy; it accompanies the development of cognitive, social, and psychomotor skills and interacts with it. Second-language learners are "more mature than first language learners and have considerable freedom in determining how much time and effort they wish to spend on their L2 and which strategies they want to utilize" (Cantoni-Harvey, 1987, p. 18).

The importance of this is that a second-language learner already knows a language (L1). In other words, a mental model of how language works exists inside them. When confronted with L2, the student can subconsciously apply their existing knowledge to the new system of sounds, vocabulary and sentence structures.

Second-Language Acquisition Theory

The application of applying the rules of L1 to L2 has been extensively researched by Dulay, Burt, and Krashen (1982). The Second-Language Acquisition Theory, according to Krashen (1981), rests on five hypotheses:

1. The Acquisition-Learning Hypothesis
2. The Natural Order Hypothesis
3. The Monitor Hypothesis
4. The Input Hypothesis
5. The Affective Filter Hypothesis

According to the Acquisition-Learning Hypothesis, language acquisition is a subconscious process in two senses: people are often "not aware that they are acquiring a language while they are doing so and they often are not aware of what they have actually acquired" (Evaluation, Dissemination, and Assessment 1991, p. 55).

This process is different from language learning. Acquisition is subconscious whereas learning is conscious and based on the analysis of L2 grammar and its rules.

The Natural Order Hypothesis states that students acquire (not learn) grammatical structures in a predictable order; that is certain grammatical structures tend to be acquired early and others late (Krashen, 1981).

> One can only teach what is learnable, and what is portable, i.e. what can be carried around in the students' heads. These two requirements must be distinguished--learning a rule does not always mean being able to use it in performance. Vocabulary and grammatical forms are acquired in a natural sequence, despite the order in which they may have been taught or the way the student learned the structures in L1 (Krashen, 1982, p. 115).

Two disclaimers need to be mentioned about the order of acquisition and the Natural Order Hypothesis. First, linguists do not have information about the order of acquisition of every structure in every language. Second, the order of learning is not observed rigidly by every acquirer; there is individual variation. There is significant agreement, however, of an average order of acquisition (California State Department of Education, 1993).

The Monitor Hypothesis focuses on the relationship between acquisition and learning. According to Krashen (1983), learners who seem to have acquired a second language through direct instruction have become fluent not because the teacher has taught them grammar rules, but because of the use of "comprehensible input."

In earlier research Krashen found that three necessary conditions (time, focus, and knowledge of the rules) needed to be met to enhance the use of the monitor. Even when these conditions were met, second language users did not use the monitor very well. "These three conditions place tremendous limits on the use of conscious grammar-and, again, all three must be met to allow effective grammar use-but even this is no guarantee" (Krashen, 1981, p. 59).

The Input Hypothesis postulates that students acquire language by understanding input containing i+1: that is, by understanding language that contains structures that are a little beyond the learners current level. The acquisition takes place by understanding the message and not focusing on the form of the input or analyzing it. This is called comprehensible input. In this process speech is not taught directly, but emerges on its own. Early speech of the students usually is not grammatically correct.

The fifth hypothesis, the Affective Filter Hypothesis, is concerned with the affective filter. The filter deals with the role of "affect," that is, the effect of personality, motivation, and other "affective variables" on second language learners. Three major variables considered important to the success in second language acquisition are anxiety, motivation, and self-confidence.

Stevick's (1980) research found that when the filter is up, input may be understood but it will not bring about language acquisition. The more the students are "off the defensive," the better the acquisition. Gardner and Lambert (1972) found in their study that the more motivated a student is, the greater the second language is acquired. Krashen (1981) found that the acquirer with more self-esteem and self-confidence did much better than those who did not.

These five hypotheses build on a foundation that students acquire second languages when they obtain comprehensible input and when their affective filters are low enough to allow the input in. "Comprehensible input is the only causative variable in second language acquisition. All other factors thought to encourage second language acquisition only work when they are related to comprehensible input" (California State Department of Education, 1991, p. 62).

Complementing Krashen's language acquisition model, Tracy Terrell (1981) developed a natural language approach for language acquisition. This approach has four basic principles:

1. The learner first comprehends the essential ideas being spoken;

2. Speech production comes slowly and spontaneously when the learner is ready;
3. Early speech emerges and progresses through natural stages, from one word answers to complete sentences;
4. Intermediate fluency is strengthened when students are encouraged to communicate, using gestures, pictures, or pantomime.

Constructionist Perspective

One framework for understanding and addressing the problems associated with accelerating second-language acquisition in the classroom, is the constructionist perspective. This perspective is rooted in the idea that humans learn through a process of building and rebuilding. Students come to understand a new concept by applying knowledge of previous ideas to the new information that they are given. "Understanding is based on the reconstruction of meaning. Such reconstruction is based on previous experience, familiarity with concepts, and a general understanding of language" (Morrow, 1993, p. 66). This research implies that as educators organize their teaching and learning environments, the constructionist nature of building and rebuilding needs to be considered.

Embedded in the constructionist approach to education is the understanding that language and culture, and the values that accompany them, are constructed in both the home and school environments (Goldman and Trueba, 1987). This approach acknowledges that children come to school with some constructed knowledge about many things. Children develop through their activities. Their early development relates to actions, objects, and events they have experienced through touching, hearing, seeing, tasting, and smelling (Piaget and Inhelder, 1969). Knowledge is a construction in that students build their knowledge from their sensory input (Piaget, 1973). Similarly,

> Education is not an affair of telling and being told, but an active and constructive process. Why is it, in spite of the fact that teaching by pouring in, learning by a passive absorption, are universally condemned but so entrenched in practice? (Dewey, 1916, p. 46).

In 1959, Robert White's research found that children like to do things that help them gain a sense of mastery over their environment. He called this intrinsic need "effectance." By focusing the students' interest on their immediate environment, giving them the English vocabulary and concepts to explain their surroundings, learning took place in a non-traditional, natural way at an accelerated rate. Moreover, as the students mastered the art of applying their innovative understanding into

> ... learning an action, instead of having it given ready-made, one of necessity learns to vary its factors to make varied combinations of them, according to change of circumstances. A possibility of continuing progress is opened up by the fact that in learning one act, methods are developed good for use in other situations. Still more important is the fact that the human being acquires a habit of learning. He learns to learn (Dewey, 1916, pp. 53-54).

Therefore, learning is accelerated and the student constructs new levels of understanding.

Constructionist Instructional Strategy

The lack of the constructionist approach is evident in much of the pedagogy, curricula, instruction, classroom configuration, and language used in the classroom. Walker's (1987) research dramatizes the lack of fit between the Hispanic students' culture and the school experience. He found systematic exclusion of Hispanic history, language, experience, and a lack of opportunity for the student to engage in developmentally or culturally appropriate learning in ways other than by teacher-led instruction.

A responsive pedagogy coming out of the constructionist perspective would utilize students' present knowledge and experiences as a foundation for appropriating new knowledge. This would entail using instructional strategies that incorporate the students' values, beliefs, and previous knowledge (Tharp, 1989).

Instructional Discourse/Instructional Conversation

Garcia (1989) examined instructional interaction for Hispanic students under conditions identified as academically successful. Specifically, this research examined instructional discourse in effective Hispanic classrooms. The study observed and analyzed the instructional styles of kindergarten, third, and fifth grade teachers whose students enjoyed academic success. Garcia's results indicate that:

1. Teachers tended to provide an instructional initiation that elicited student responses.
2. Once the teacher initiated a lesson, students were allowed to take control of the specific lesson and topic and were able to invite interaction from other students.

These findings indicate that teachers were clearly allowing student-student interaction in the child-reply component of instructional discourse. It also suggests that strategies that emphasize student-student interaction can positively enhance linguistic development.

The basis of enhanced academic productivity for Hispanic students lies in the manner in which teachers allow communication and literacy activities to be organized in the classroom, which can enhance cognitive development.

Effective instructional discourse has been demonstrated as highly relevant to the broader linguistic, cognitive, and academic development of Hispanic students (Garcia, 1994). The instructional discourse strategy is designed to promote learning and to take advantage of spontaneous interactions that are not normally associated with a traditional formal classroom (Tharp and Gallimore, 1989).

The interactions within the class center on an idea or a concept. The conversation allows for a high level of student participation without undue domination by the teacher. Strategically, the teacher presents provocative ideas or experiences, then questions, prods, challenges, and coaxes the discussion to the desired outcome.

According to Vygotsky (1978), children learn higher mental functions by internalizing social relationships. He describes a zone of proximal development, a range of social interaction between a teacher and student. The student can only perform within this range with the help of a teacher. Proximal development ends when the student can function independently. Sulzby's (1986) research found that to promote language development, adults needed to interact with children by encouraging, motivating, and supporting them.

Rogoff (1990) suggests that this classroom discourse is very similar to interactions that take place between adults and children outside school. This research concluded that these interactions appear to be very important for children's learning and cognitive development, especially in developing advanced linguistic, thinking, and communicative skills.

Instructional Discourse has ten elements (Goldenburg, 1992). The first five are instructional while the second five are conversational elements.

1. Thematic focus. Teacher selects theme or idea as a starting point for focusing original discussions.
2. Activation and use of background and relevant schemata. Teacher provides background information necessary for understanding.
3. Direct Teaching. Only when necessary for skill or concept attainment.

4. Promote complex language and expression. Teacher elicits extended student contributions using a variety of techniques-e.g., questions, restatements, pauses, and invitations to expand.
5. Promoting bases for statements or positions. Teacher promotes students' use of text, pictures, and reasoning to support argument or position.
6. Fewer "known-answer" questions. Discussions center on questions and answers for which there are more than one correct response.
7. Responsivity to student contributions. Teacher is responsive to students' statements but keeps discussion focused.
8. Connected discourse. Discussion is characterized by multiple, interactive, connected turns; succeeding utterances building upon previous ones.
9. Challenging non-threatening atmosphere. Challenging atmosphere balanced by positive affective climate. Teacher is more collaborator than evaluator.
10. General participation, including self-selected turns. Teacher encourages general participation among students. Teacher does not hold exclusive rights on who gets to speak.

Active Teaching

The Significant Bilingual Instructional Features (SBIF) study was conducted by Tikunoff in 1983. The purpose of the study was to identify attributes found in fifty-eight effective classrooms. Two of the instructional features found were:

1. Task outcomes were clearly specified for students.
2. Active teaching behaviors were utilized extensively to (a) maintain students' engagement in task by pacing instruction appropriately and promoting involvement, (b) monitor students' progress, and (c) provide immediate feedback to students.

The SBIF study also showed that effective instructional features for Hispanic students included instructional practices that took advantage of the students' culture as well as special strategies for teaching ESL.

Reported analysis of instructional discourse in literacy and math, along with analysis of actual literacy products (dialogue journals, learning logs, writing workshop publications, etc.) and math products (learning logs, homework, surveys, etc.), indicates that teachers of Hispanic students organize instruction so that students were required to interact with each other utilizing collaborative learning techniques. It was during the student-student interactions that higher cognitive order linguistic skills were observed (Sullivan, 1992).

Sullivan's study also revealed the following:

1. Students progress systematically from writing in Spanish to writing in English.
2. Students' writing in English emerged at or above their grade level of writing in Spanish.
3. Students' writing in English was highly conventional, contained few spelling or grammatical errors, and showed systematic use of invented spelling.
4. Students made the transformation from Spanish to English themselves, without any pressure from the teacher to do so.

Garcia's (1994) research found that active teaching behaviors generally focused on four areas:

1. Communicate clearly. This includes giving accurate directions, specifying task and measurements; presenting new information by explaining, outlining, summarizing, and rewriting.
2. Obtain, maintain engagement. Purpose is to maintain the focus to the specific task, pace instruction appropriately, and communicate expectations for successful performance.

3. Monitor progress. Review work frequently and adjust instruction to maximize accuracy.
4. Provide immediate feedback. Help students achieve success or give them access to information that will guide them to a successful outcome.

Therefore, a pedagogy for active learning has some primary assumptions. The first is that learning is by its nature an active process. The second is that different people learn in different ways. Thirdly, the process of education is about self-development and learning is only meaningful when learners have taken knowledge and made it their own. Piaget (1976) states that "children do not receive knowledge passively but rather discover and construct knowledge through activities" (p. 119). As students interact with their psychological and physical environments, they begin to form structures of thought. "These structures help to organize the students' experience and direct future interactions" (Meyers, 1993, p. 13).

Student Empowerment

Cummins (1990) researched extensively student empowerment and its effects on the academic achievement of minority language students. The study indicated that students who were given a sense of pride in their culture and made to feel a part of the school became academically successful. The study showed that when educators saw their role as adding a second language rather than replacing a language and a culture, that the process of assimilation became a part of the learner's frame of reference.

The fact that children come from diverse homes and backgrounds leads to a recognition of a major problem. Children from different environments cannot be equally compared, since they possess different repertoires. The poor academic performance of many minority language children is not based on their intellectual capabilities but on school achievement tests (De Avila, 1988).

Attitude

There are sociocultural variables that contribute to a child's motivation to communicate in a second language. One of these factors is the attitude that the learner has toward members of the target language group. In a study of attitudes of English-speaking Canadians towards French-speaking Canadians, those whose possessed a high degree of positiveness towards the French-speakers learned French at a greater rate than those who did not (Gardner and Lambert, 1972; Gardner and Lysynch, 1990).

Similar studies on the relationship between attitudes and language attainment have been conducted by Oller, Hudson, and Liu, 1977 and Chihara and Oller, 1978. These studies involved Chinese (Oller, Hudson, and Liu, 1977), Japanese (Chihara and Oller, 1978), Spanish (Gilson, 1987; Rameriz, 1985), Puerto Rican (Fayer, 1984), Arabic (Suleiman, 1995), Malaysian and Indonesian (Rocha-Erkaya, 1989) students' achievement in English as a second language and the related attitudinal factors. Although the researchers found mixed results on the relative benefit or lack of benefit of integrative and instrumental motivation, they generally concluded that positive attitudes towards self, native language group, and the community of second language speakers augmented their proficiency in English (Sulieman, 1995).

Children with positive attitudes tend to solicit help with a second language and are called high-level generators (Seliger, 1977). This research found that high-level generators are the most successful second language learners. These individuals placed themselves in situations that exposed them to the target language, and were willing to use it for communication. These individuals receive the necessary input as well as opportunities to practice.

Acculturation

Another factor in the acquisition of a second language is acculturation. The process by which one learns a second language is directly related to the degree one can individualize the culture and behavioral patterns of the speaker of the second language.

Acculturation is the "major casual variable in second language acquisition" (Schumann, 1978, p. 34). This research shows that to the degree that the learner acculturates to the target language group, this will influence the degree to which the target language will be acquired. How acculturation is achieved is the basic premise of the theories of second language acquisition expounded by Krashen.

Krashen (1985, 1992, 1993) found that language acquisition had two primary components: The first is interaction, the other comprehensible input. Together these two components validate second language acquisition. According to Krashen (1985), comprehensible input in conjunction with lowering the affective filter in the classroom allows language learning. It can become the motivating factor for the second language learner. In a related study identifying the academic failure of Hispanic students, it was found that the core of the education process was in redefining the image of the Hispanic student from one of failure to one of success (Abi-Nader, 1990).

The language environment is the sum of everything the student comes in contact with during the day. It includes many diverse activities ranging from school, watching a video, visiting with friends or eating in a restaurant. The quality of this interaction is paramount to the learning process (Dulay, Burt, Krashen, 1982). In theory, students attending school are immersed in an English environment; in practice it is the opposite.

Classroom Environment

Another area where acculturation effects students is in the classroom. Zanyer (1990) analyzed the effects of the classroom environment and found that the classroom played a central role in creating a stress-free atmosphere conducive to learning. The diversity of the students' learning style became a part of this curriculum. Students can show how previous knowledge learned outside school could be used to make a favorable connection to what was being learned in the program.

The solution for the Hispanic students' academic failure exists in an educational environment that combines current teaching strategies that enhance and accelerate second-language acquisition. This type of ambience encourages and motivates the students to assume greater control over their learning styles and goals.

The majority of the literature reviewed stressed the importance of getting the students committed to the learning process. This design utilized the constructionist theory of building on previous knowledge and experience with instructional discourse and active teaching activities. The supposition was that creating an enhanced teaching and learning environment would increase the students' academic achievement. Thus, as the students experienced academic success, they would become motivated to learn. "The amalgamation of motivation and school achievement has affirmatively been shown to efficaciously stop the downward spiral of school failure experienced by elementary LEP Hispanic students" (Moore, 1993, p. 24).

CHAPTER III

RESEARCH DESIGN AND PROCEDURES

The purpose of this chapter is to discuss educational research, the research design, the population, the use of the measuring instruments and analytical processes employed to evaluate the data.

Educational Research

The goal of scientific research is to explain, predict, and/or control phenomena. "This goal is based on the assumption that all behaviors and events are orderly and that there are effects which have discoverable causes" (Gay, 1996, p. 5). Progress toward these goals involves acquisition of knowledge and the development and testing of theories.

Educational research is the formal, systematic application of the scientific method to the study of educational problems. "The goal of educational research is to explain, predict, and/or control educational phenomena" (Gay, 1996, p. 7). The major difference between educational research and scientific research is the nature of the phenomena studied.

> It is considerably more difficult to explain, predict, or control situations involving human beings. There are so many variables, known and unknown, operating in any educational environment that it is extremely difficult to generalize or replicate findings. The kinds of rigid controls that can be established and maintained in a lab are impossible in educational research (Gay, 1996, P. 9).

Educational research focuses on educational practice (McMillian, 1992, p. 21). "This practice centers on instruction and learning and includes practices that influence instruction such as curriculum development and implementing innovations" (Chelimsky, 1987, p. 48). As a result, "when talking about educational research, we are referring to a family of methods which share the characteristics of discipline inquiry (Schumacher, 1992, p. 9).

Discipline inquiry "is conducted and reported in such a way that the argument can be examined painstakingly" (Cronbach and Suppes, 1969, p. 15). Shulman (1981) notes that discipline inquiry does not refer to ritualization and narrow forms of investigation nor necessarily follow well-established, formal procedures. Cornbach and Suppes (1969) further suggest:

> Whatever the character of a study, if it is disciplined, the investigator has anticipated the traditional questions that are pertinent. He institutes control at each step of information collection and reasoning to avoid the source of error to which these questions refer. Thus the report of a disciplined inquiry has a texture that displays the raw materials entering the argument and the logical processes by which they were compressed and arranged to make the conclusions credible (pp. 16-17).

Limitations of Educational Research

Knowledge acquired through educational research is limited by the nature of educational practice and how the research itself is conducted. Educational research is constrained by ethical and legal considerations in conducting research on human beings, the nature of education, the complexity of educational practices, and methodological limitations (Schumacher, 1992).

Despite these difficulties, educational research has made considerable gains in knowledge. Some educational research, especially in the area of student achievement, has a long tradition of resolving methodological problems even though "education is not itself a science or a discipline" (McMillan, 1992, p. 24).

Therefore, with a conceptual understanding of research, teachers and administrators can read and conduct small scale studies. Furthermore, they can take an active role in action research designs that advance both the knowledge and improvement of educational practice (Schumacher, 1992). Action research is less rigorous and easier to do than regular educational research. Consequently, this method coupled with the review of previous research and literature, "provides the best results we know for making educational decisions (Gay, 1996, p. 284).

Action Research

Issac and Michael's 1990 findings showed that the purpose of action research was "to develop new skills or approaches with direct application to the classroom" (p. 55). Similarly, "the primary goal of action research is concerned with the solution of a specific classroom or school problem, not necessarily a contribution to science" (Gay, 1996, p. 10). The value of action research is confined mainly to those conducting it. Thus,

> It is a means by which concerned school personnel can attempt to improve the educational process, at least within their environment. The value of action research to true scientific progress is limited. True progress requires the development of sound theories having implications for many classrooms, not just one or two. One sound theory that includes 10 principles of learning may eliminate the need for hundreds of would be action research studies. Given the current status of educational theory, however, action research provides immediate answers to problems that cannot wait for theoretical solutions (Gay, 1996, pp. 12-13).

One-Group Pretest-Posttest Design

This study employed an action research framework that utilized a quasi-experimental one-group pretest/posttest design. Action research is the application of the scientific method to the solution of day-to-day school problems (Gay, 1996). This type of research is used in "settings where it is not possible to control all the relevant variables, but only some of them . . . It is characterized by methods of partial control" (Issac and Michael, 1990, p. 54).

Although action research uses the same methods as regular research, many of the rigorous criteria are relaxed (Schumacher, 1992; Kazdin, 1984). In a one group pre/post design "a single group of subjects, such as pupils in a classroom, are given a pretest on the dependent variable, and then they are exposed to the experimental treatment and then retested on the dependent variable . . . The pre/post test results can then be compared to each other to determine if any significant change has taken place" (Gay, 1996, p. 284).

However, a quandary arose between the researcher and FUSD. FUSD would not authorize any study that involved two groups of students being compared to one another or two teachers' delivery style being compared with each other. A gap-reduction model was endorsed by FUSD where a group could be compared to itself. However, the researcher needed to evaluate the pre/post scores of the Hispanic students to a comparison group. A successful resolution was to use an artificial control group. When using an artificial control group,

> ...the students are tested on a standardized measure, the program is implemented, and then the students are

posttested on the same measure (or another form of the same test). The scores are reported as normal curve equivalents (NCEs) which range from 1-99. This type of study compares the gain seen in the group of students to those of the national norm sample (artificial control group) used in constructing the standardized test. Such designs are commonly seen because they have long been used to evaluate federal educational programs, such as Chapter One (Slavin, 1992, p. 35).

The one-group pretest/posttest design with an artificial control group became the only model compatible with both action research and the gap-reduction model. FUSD agreed and authorized its use. The design was implemented as follows: T1 X T2.

T1 = Pretest

The pretest was administered to 70 Hispanic LEP fifth grade students the first week of June in the two designated classrooms of the after-school program and took one week to complete. Wallen's 1992 research found that threats to internal validity were reduced if the "testing locations were held constant and the testing conditions were the same for all participants" (p. 214).

The test was administrated and data collected by FUSD assessment personnel who do this function yearly. The assessment personnel had no invested interest in how the research came out and were unaware about which students were or were not a part of the study. This process reduced collector bias because the conditions were standardized (individuals were trained by FUSD for testing at all school sites within the district). "This approach is very effective because the data collected is less susceptible to personal influence" (Wallen, 1992, p. 215). By using the standardized procedures and personnel, the issue of instrument decay was also reduced. Therefore,

> Instrument decay can be controlled in two ways: (a) by standardizing the instrument process (by examining test booklets to ensure that parts are not illegible, do not have answers written in them, and so forth) and/or (b) by scheduling data collection so as to avoid data collector boredom or fatigue (Wallen, 1992, p. 214).

The CTBS and IPT were conducted according to the schedule recommended by the examiners manual (CTB/McGraw-Hill, 1988, p. 3), and the IPT technical manual (Ballard and Tighe, 1982, p. 2), and followed by FUSD.

Monday:	Preliminary I was administrated	20 minutes
	Preliminary II was administrated	20 minutes
	IPT administrated	15 minutes
Tuesday:	Vocabulary Test	26 minutes
	Reading Comprehension	43 minutes
Wednesday:	Spelling Test	14 minutes
	Language Mechanics	20 minutes
Thursday:	Language Expression	37 minutes
	Mathematics Computation	33 minutes
Friday:	Mathematics Concepts/Application	37 minutes
	Reference Skills	17 minutes

None of the three classroom teachers (who were instructors in the program) saw results of the CTBS or IPT test until the posttest was completed. Although it was possible that the pretest might have enhanced the effectiveness of the after-school program, this seemed unlikely. The students had taken the CTBS test over the last four previous years with little academic growth. The test results of the students' previous scores are graphically illustrated in Figure 4.2 and numerically listed in Appendices K-M.

The pretest results of the IPT and CTBS (Table 3.1) of the Hispanic LEP fifth grade students were utilized by FUSD to calculate individual growth and the group mean in oral

English proficiency, English reading comprehension, English language mechanics, and total math skills at the beginning of the six-month after-school enhancement program and became the baseline of this research (Fontana Bilingual Assessment Center, 1995).

Seventy students were pretested and thirty were randomly assigned to be a part of the study. Only FUSD had the knowledge of whom the thirty students were and what scores they had achieved on the pretest. This procedure reduced the threat of regression because random assignment was employed and students were not admitted to the program solely because of low pretest scores. "A regression threat usually does not apply if the group being studied was randomly chosen and was not selected on the basis of extreme pretest scores" (Wallen, 1992, p. 225).

Table 3.1

Pretest Results on the IPT/CTBS Test SPSS Release 4.1

	IPT	Read	Lang	Math
1.	27	527	636	650
2.	13	527	616	668
3.	11	566	629	687
4.	19	530	583	658
5.	52	562	661	690
6.	06	557	608	584
7.	30	527	569	622
8.	48	561	575	663
9.	30	527	560	610
10.	20	543	621	551
11.	19	557	536	584
12.	11	566	625	685
13.	17	527	545	626
14.	17	562	620	686
15.	27	546	536	621
16.	16	601	595	618
17.	18	566	575	639
18.	19	567	620	686
19.	30	570	575	687
20.	30	570	575	687
21.	17	646	659	613
22.	17	570	629	687
23.	11	640	680	706
24.	19	588	639	653
25.	20	574	575	620
26.	30	629	610	684
27.	45	582	536	605
28.	10	627	638	675
29.	32	579	690	675
30.	44	624	684	696

IPT Mean = 23.40

CTBS/Read Mean = 571.03

CTBS/Lang Mean = 608.77

CTBS/Math = 650.50

IPT = Idea Oral Proficiency Test

CTBS = California Test Basic Skills

Read = Reading Score

Math = Math Score

Lang = Language Score

X = The Intervention

The two classrooms for the after-school program were located in separate areas on the campus of Juniper Elementary School, Fontana, California. One classroom was located in a portable building adjacent to the playground. The second classroom was a part of the main campus wing. Each classroom held four one-hour sessions each week, Monday through Thursday. The total duration of the after-school program was six months. The program started with the pretest administered the first week of June and ended with the posttest which was conducted the first week of December.

Each classroom had a large carpeted area used for whole group activities. Two portable swimming pools (six feet by fifteen feet) were placed in this area and filled with sand. Artifacts, fossils, and bones were buried in the sand. Smaller areas in both classrooms were arranged for small group activities. These activities centered on task such as measuring, weighing, diagraming, writing, reading, and using the computers.

Standardization of Procedures

Classroom arrangements and activities in each of the two settings were as similar as possible. Each session began with a large group activity involving attendance, reading or journal writing, and a demonstration by the teacher. The period varied between fifteen and twenty-five minutes. The demonstration or information period set the stage for the remainder of the hour. For the last thirty to forty minutes, the students worked in small groups or pairs to do the day's activities.

The contextualized environment of the classroom was designed to increase and accelerate English language acquisition. The curriculum was based on current research in constructionist, instructional discourse, and active teaching strategies. The ultimate purpose of the curriculum and the classroom environment was to guide the fifth grade LEP Hispanic student's progression toward grade level proficiency.

Each pair of students was assigned a task to perform within the context of the dinosaur dig. Critical thinking and independent judgement skills were developed through the integration of various themes. The students worked in pairs or small groups to solve problems in a variety of ways, that encouraged the development of academic English language skills in both social and recreational settings.

Instruction during the after-school program focused on the students' development rather than the mastery of specific English or grammar skills. An axiom made by this researcher was that by not focusing on the area of academic weakness (i.e., sentence structure, tenses, writing in complete sentences, etc.), but on the students' interest, the English skill would be gained indirectly.

In each classroom there were various levels of language development and academic proficiency. Student needs were met through creative multi-level teaching techniques. All language instruction was based on real needs, purposes, and functions across many curricular levels.

Language skills were charted for progress. This type of authentic assessment showed each student's progression as their level of proficiency increased. The language skills chart (as shown in Appendix A) included: common objects, (objects buried in the pools), bone or body parts, names of various objects, colors, and locations. Other language skills included letter combinations, English phonic sounds, answers from readings, and correct use of punctuation and sentence structure.

Numerical skills were also charted for progression (Appendix B). This type of authentic assessment showed each student's progress as time in the program increased. By putting the students in a contextualized environment and systematically monitoring their progress, the students were given opportunities to explore and manipulate objects according to size, greater than/less than, comparing, contrasting, and classifying.

T2 = Posttest

The posttest was administered in the two designated classrooms and was conducted the first week in December. The assessment took one week to complete. The test was administrated by FUSD assessment personnel. The same group of three data collectors was used throughout the program and each collector tested equal numbers of students. The three teachers of the after-school program were not allowed to be present during the pre or post testing of the class. The testing was conducted as follows:

Monday:	Preliminary I was administrated	20 minutes
	Preliminary II was administrated	20 minutes
	ITP administrated	15 minutes

Tuesday:	Vocabulary Test	26 minutes
	Reading Comprehension	43 minutes
Wednesday:	Spelling Test	14 minutes
	Language Mechanics	20 minutes
Thursday:	Language Expression	37 minutes
	Mathematics Computation	33 minutes
Friday:	Mathematics Concepts/Application	37 minutes
	Reference Skills	17 minutes

The posttest results of the IPT and CTBS (Table 3.2) of the 30 Hispanic LEP fifth grade students were utilized by FUSD to calculate individual growth and the group mean in oral English proficiency, English reading comprehension, English language mechanics, and total math skills at the end of the six-month after-school enhancement program.

No extraneous events at the school occurred during the six-month program. Since seventy students were involved, it seemed unlikely that a particular program or outside event would have affected all of these students in a way that introduced a bias in favor of the after-school program. However, there was always a possibility that something in the community could have had an impact on these students and that occurrence was not observed. Nevertheless, it was determined by both FUSD and the three teachers involved, that no extraneous events occurred during the six-month program.

Maturation was controlled by the design of the study (random). The six-month interval for the pre/post testing was the same for both groups. Therefore, the maturation threat was controlled by random assignments and by making sure that the time interval was the same for both groups. "...if this is done, maturation should not favor any particular treatment" (Wallen, 1992, p. 216).

Population

The total number of participants for the after-school program was seventy, thirty-five in each class. Thirty LEP Hispanic fifth grade students (15 girls and 15 boys ages nine to eleven) were selected randomly by FUSD from the enrollment list of the seventy students who registered in the after-school enhancement program at Juniper Elementary School, Fontana, California. These thirty students became the study group for this research. Each of these students volunteered to participate in the after-school program. The parents of the participants were initially contacted through a letter requesting permission for their children to participate in the study (Appendix C).

Table 3.2

Posttest Results on the IPT/CTBS Test SPSS Release 4.1

	IPT	Read	Lang	Math		IPT	Read	Lang	Math
1.	59	646	656	696	16.	47	736	707	707
2.	47	647	698	695	17.	51	707	752	688
3.	49	707	675	708	18.	50	689	706	721
4.	54	659	575	688	19.	49	709	716	732
5.	65	688	700	715	20.	55	724	720	716
6.	48	650	684	704	21.	44	802	754	684
7.	47	677	659	655	22.	52	714	754	721
8.	70	686	667	678	23.	40	783	755	781
9.	62	650	592	666	24.	47	723	684	730
10.	61	671	646	599	25.	49	714	707	696
11.	56	683	656	662	26.	66	767	707	748
12.	47	697	691	732	27.	77	721	536	610
13.	55	659	662	682	28.	44	741	673	699
14.	67	689	706	721	29.	60	718	701	732
15.	61	676	575	698	30.	75	739	710	717

IPT Mean = 55.06
CTBS/Read Mean = 702.40
CTBS/Lang Mean = 680.80
CTBS/Math = 699.36

IPT = Idea Oral Proficiency Test
CTBS = California Test Basic Skills
Read = Reading Score Math = Math Score
Lang = Language Score

The criterion for admittance to the program was:

1. Written permission from the parents.
2. Student must have been administratively advanced (Administrative advancement is a term used to pass a student who has failed all grade level requirements. Because of FUSD's unwritten policy against retaining a student, all students were allowed to be promoted whether they have met grade level expectations or not) a minimum of two years and were at least two grade levels below their peers in all content areas (Appendices D-G).
3. The student's level of oral English proficiency was at the 5-60 level or lower as measured by the IPT.
4. The student was designated an LEP Hispanic student.

Classroom Personnel

Wallen's 1992 research states that implementation threats can be controlled in intervention-type studies in several ways. The first was that the

> ...researcher can evaluate the individuals who implement each method on some pertinent characteristic (e.g., teaching ability) and then try to equate the treatment groups on this dimension (e.g., by assigning

> or using teachers of equivalent ability for each method). Another approach is to require that each method be taught by all teachers in the study. Finally, several different individuals can be used to implement each method, thereby reducing the chances that any one method will gain an advantage (Wallen, 1992, p. 217).

Subsequently, the three teachers chosen in the study were identified through a process comparable to that in locating elementary curriculum teachers. Supervisory personnel in the FUSD Bilingual Department were asked to identify teachers who were interested in teaching an after-school enhancement program. The program was designed for LEP Hispanic students and would utilize constructionist, instructional discourse, and active teaching strategies. Because these were the same criteria for Language Development Specialist (LDS), it was hoped that the variables that affect implementation problems could be reduced drastically or eliminated completely.

Each of the two classes was staffed with a certificated teacher and a bilingual aide. The teacher of each class possessed an LDS certificate and had knowledge about constructionist, instructional discourse, and active teaching pedagogy, and second language acquisition strategies. (These were the competency requirements for an LDS credential and an instructor in this intervention). The bilingual aide spoke and could write in both Spanish and English. The aide was paid from a separate fund provided by FUSD. The teachers and aides taught in both classrooms teaching all of the students at various times throughout the program.

Measuring Instruments

This study utilized the pre/post test scores of the CTBS and IPT tests to measure academic achievement and oral English proficiency of the LEP students. The IPT and CTBS are standardized tests administered at the beginning of each year for all FUSD students. However, English only students are not tested with the IPT.

To ascertain increased academic achievement, the pre/post test results of the IPT and CTBS tests were appraised. The differences between the pre/post test scores were calculated to verify the four hypotheses. To accept the hypotheses the test results had to be significant at the .05 levels.

In addition, the analyses of the pre/post test were utilized. The test results compared the growth of the students during the intervention period with the national normed group. The final uses of the scores equated the students' previous results over the last four years with their current testing level. The comparison evaluated the scores to assess significant change from previous years' GEs and NCEs with the student's present GE and NCE ranking (Appendices D-G).

Idea Oral Language Proficiency Test (IPT)

The IPT is an individually administered measure of speaking and listening proficiency in English as a Second Language designed for students in Grades K-6. The test was developed by Ballard and Tighe, a nationally respected firm. Both the reliability and the validity of the instrument have been researched and documented. Inter-item consistency and reliability range from .991 to .993; test/retest reliability is .88 (Keyser and Sweetland, 1991).

The test contains 83 items and requires between five and 20 minutes to administer, depending on the student's level of proficiency. Raw scores are turned into proficiency scores. These scores are then used to classify the student as non-English speaking, limited-English speaking, or fluent English-speaking.

The test consists of a series of questions or instructions to the students. Most items (85%) require an oral response. The remaining 15% test comprehension by requiring the student to make some physical response, such as pointing to something in a stimulus picture. The comprehension items test spatial concepts, commands, time, and so forth. Many oral production items test vocabulary (e.g., "What is this?"). The vocabulary tested relates to school, body parts, pet animals, and fruits and vegetables, at the lower levels, occupations, marine animals, tools, and holidays at the upper levels. Other oral production items test syntax, often through a sentence-completion format (e.g., "Where are they going? They . . . "). Some items test morphology, often through a yes/no question format (e.g., "Does she live here?"). In the latter example, the student is told to answer in a complete sentence. The critical feature being tested is the /s/ morpheme of third person singular verb forms. At the highest levels, the test also taps a creative/expressive ability by asking the examinee both to describe an object and personal activities and to retell a story in his or her own words.

California/Comprehension Test of Basic Skills (CTBS)

The CTBS is a nationally recognized normed test used to measure basic academic skills including English reading comprehension, English language mechanics, and total math scores. Both the reliability and validity of the test have been well documented. Consistency reliability coefficients range from .86 to .93. Internal consistency indices (K-R 20) show the subtest and test to be homogeneous at .98-.99 (Buros, 1959, 1978; McGraw-Hill, 1988).

The reading test has two subparts: vocabulary, and comprehension. In the former the student identifies synonyms. In the latter, the student reads a poem, story, or article and answers questions about it. The material to be read is often four or five paragraphs or stanzas long.

Three subtests in mechanics, expression, and spelling, constitute the language section of the CTBS. The mechanics section measures the student's ability to punctuate and use capital letters in stories and letters. In the expression section, the student must add the correct words and phrases to incomplete sentences, replace underlined parts of sentences in a story or poem, or recognize errors in usage. The measurement of spelling is limited to the recognition of incorrectly spelled words.

There are three arithmetic tests--computation, concepts, and application. In the first subtest, the student solves addition, subtraction, multiplication, and division problems involving various types of numbers. The concepts and applications subtests are composed of verbal problems. In the case of the former, the student is to recognize or use an appropriate numerical or geometric concept or technique in each test item. In the latter test, the task required of the student involves the ability to comprehend an arithmetic problem, to select the appropriate method for solving it, and to solve for the correct answer.

In Dalton's 1981 research, California students in Grades three to six took both the CTBS and the IPT. Forms A of the IPT correlated .67 with the CTBS Language Usage score, .62 with the CTBS Reading score, and .60 with the CTBS Grade Equivalent score. The pattern for Form B was similar but slightly higher (.71, .63, .64). These correlations exceed the correlations with reading achievement in the .30 to .50 ranges reported for other oral language test, such as the Language Assessment Scale, the Basic Inventory of Natural Language, and the Bilingual Syntax Measure (De Avila and Duncan, 1992).

Analytical Process

The current study employed action research. It utilized a one-group pretest posttest design with an artificial control group. As with all one-group pre/posttest designs, there was no assurance that the intervention introduced was the only factor in the differences in the pre/posttest scores. Therefore,

> The use of objective information, continuous assessment of performance over time, and the reliance on stable levels of performance before treatment, are requirements of quasi-experimental designs. The results obtained do not necessarily mean that the intervention led to change, even true experiments do not provide certainty that extraneous influences were completely ruled out. Therefore, when a study includes several features that can rule out threats to internal validity, they do not depart from true experiments (Kazdin, 1984, pp. 100-103).

This type of research is appropriate in "settings where it is not possible to control all the relevant variables, but only some of them . . . It is characterized by methods of partial control" (Issac and Michael, 1990, p. 54).

The inferential statistical measurement used to determine the difference of the mean between the pre/posttest of the CTBS and IPT, was the one-tailed t-test for matched groups. According to Slavin (1992), "This test is most often used when we wish to compare the same subjects under two different conditions or at two different times" (p. 162). In addition, Kazdin (1984) recommends that a t-test be used to appraise the results of the data when using a pre/post design.

The mean results of the four tests (1 IPT, 3 CTBS) were calculated to determine the difference between the pre/post test scores. The results had to be significant at the .05 levels for the four hypotheses to be accepted.

Another way that the scores were used compared the growth of the students during the intervention with the norm control group. This showed how the students in the program ranked in relation to the national norm group (artificial control group).

The final use of the scores compared the students' present GEs and NCEs with previous GEs and NCEs over the last four years, and evaluated any significant change. This was an important aspect of this research because, "if patterns have been stable over several years, why would change occur unless something significant was introduced to cause it?" (Kazdin, 1984. p. 103). Chapter four will explain the findings of this research in detail.

CHAPTER IV

FINDINGS

This study was conducted to measure the effectiveness of an after-school enhancement program that took place at Juniper Elementary School, in Fontana, California. The program was initiated to improve and accelerate the academic achievement and English oral language proficiency of LEP Hispanic fifth grade students. Successful attainment of these goals was appraised by evaluating the pre/post test results of the IPT and CTBS test. Comparisons of the test results were made with the national norm group. The remainder of Chapter IV will interpret the data and analysis of these findings.

Restatement Of Purpose

The focus of this investigation was to initiate and evaluate an after-school enhancement program. The design implemented allowed for a voluntary one hour after-school enhancement program for LEP Hispanic fifth grade students. These students were given academic instruction in a contextualized environment that provided English language instruction along with a hands-on learning environment. The after-school program employed recent research on accelerated language learning, constructionist theory, instructional discourse and active teaching strategies. By using these modes of teaching concurrently, it was postulated that after six-months, the Hispanic students would show a significant increase in both academic and oral English skills.

Restatement of Procedures

This action research was constructed as a one-group pretest/posttest design with an artificial control group. The study utilized the scores of the pre/posttest of the CTBS and IPT to measure academic advancement and oral English proficiency. The data obtained from the test was processed through the SPSS Release 4.1 program for IBM computers. A one-tailed t-test was conducted on the results. Thus, "the possibility that the results could come out in a direction opposite to that hypothesized was ignored" (Slavin, 1992, p. 250). The .05 levels of significance were chosen as the level of probability to accept the four hypotheses. Furthermore,

> ...statistical conventions generally demand that there be less than 1 chance in 20 (5%) that a difference

> between two means could have happened by chance. In some instances, researchers are not satisfied unless there is less than 1 chance in 100 (1%) that random variation could account for findings. The more stringent we are in setting criteria for rejecting the null hypothesis, the more we reduce the possibility of error (Slavin, 1992, p. 8).

In addition, the analyses of the pre/post test were evaluated to appraise the growth of the students during the intervention with the national norm group.

The final use of the scores equated the students' previous results (of the CTBS) over the last four years with their current testing level. The comparison evaluated the scores to assess significant change regarding present and previous years' GEs and NCEs. The remainder of the chapter contains those findings.

Statistical Review

To ascertain increased academic achievement, the pre/post test results of the IPT and CTBS tests were assessed. The differences between the pre/post test scores were calculated to verify the four hypotheses. To accept the hypotheses the test results must be significant at the .05 levels.

Hypothesis One

> There would be a significant increase in English oral language proficiency after the six-month after-school intervention ($p<.05$).

The IPT pretest was administered to the 30 LEP Hispanic students during the first week of June. The mean for the students was 23.4 (Table 4.1). The IPT posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 55.1. The results of the t-test are shown in Table 4.1. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 23.22. The test showed a significant difference between the pre/post scores. Hypothesis One was accepted.

Table 4.1

t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the IPT Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE IPT	30	23.4	11.71	2.15		
POST IPT	30	55.1	9.58	1.75	*23.22	29

(Difference) Mean	Standard Deviation	Standard Error
31.6667	7.471	1.364

Note. One-tailed test of significance: *p<.05 df = 29

The individual pre/post scores for the IPT ranged from a low of 06 to a high of 75 resulting in an average gain in the final score of 31.6667 with a standard deviation of 7.471.

Hypothesis Two

> There would be a significant increase in reading comprehension after the six-month after-school intervention ($p<.05$).

The CTBS/Reading pretest was administered to the 30 LEP Hispanic students during the first week of June. The mean for the students was 571.0 (Table 4.2). The CTBS/Reading posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 702.4. The results of the t-test are shown in Table 4.2. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 74.50. The test showed a significant difference between the pre/post scores. Hypothesis Two was accepted.

Hypothesis Three

> There would be a significant increase in English language mechanics after the six-month after-school intervention ($p<.05$).

The CTBS/Language pretest was administered to the 30 Hispanic LEP students during the first week of June. The mean for the students was 608.7 (Table 4.3). The

CTBS/Language posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 680.8. The results of the t-test are shown in Table 4.3. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 8.58. The test showed a significant difference between the pre/post scores. Hypothesis Three was accepted.

Hypothesis Four

> There would be a significant increase in total math scores after the six-month after-school intervention ($p<.05$).

The CTBS/Math pretest was administered to the 30 Hispanic LEP students during the first week of June. The mean for the students was 650.5 (Table 4.4). The CTBS/Math posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 699.4. The results of the t-test are shown in Table 4.4. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 11.55. The test showed a significant difference between the pre/post scores. Hypothesis Four was accepted.

Table 4.2

t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Reading Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE CTBS/RD	30	571.0	34.72	6.34		
POST CTBS/RD	30	702.4	39.59	7.29	*74.50	29

(Difference) Mean	Standard Deviation	Standard Error
131.3667	9.658	1.763

Note. One-tailed test of significance: *p<.05 df = 29

The individual pre/post scores for the CTBS/Reading ranged from a low of 527 to a high of 802 resulting in an average gain in the final score of 131.3667 with a standard deviation of 9.658.

Table 4.3

t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Language Test using SPSS

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE CTBS/LG	30	608.1	44.2	8.11		
POST CTBS/LG	30	680.8	53.91	9.84	*8.58	29

(Difference) Mean	Standard Deviation	Standard Error
72.1333	46.073	8.412

Note. One-tailed test of significance: *$p<.05$ df = 29

The individual pre/post scores for the CTBS/Language ranged from a low of 646 to a high of 706 resulting in an average gain in the final score of 72.1333 with a standard deviation of 46.073.

Table 4.4

t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Math Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE CTBS/Mth	30	650.5	40.17	7.33		
POST CTBS/Mth	30	699.4	36.85	6.72	*11.55	29

(Difference) Mean	Standard Deviation	Standard Error
48.8667	23.172	4.231

Note. One-tailed test of significance: *p<.05 df = 29 The individual pre/post scores for the CTBS/Math range from a low of 551 to a high of 732 resulting in an average gain in the final score of 48.8667 with a standard deviation of 23.172.

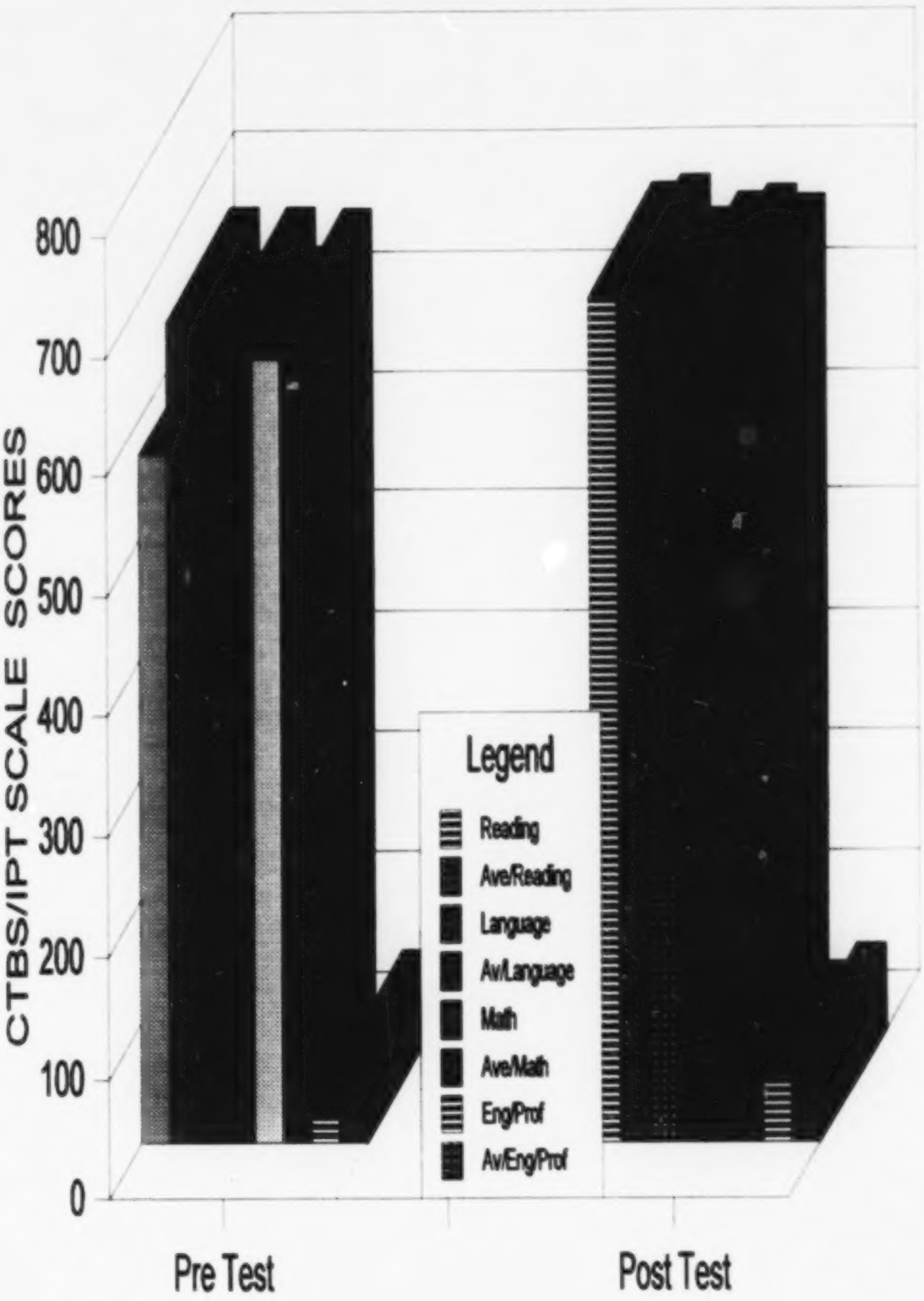

Figure 4.1. Graphic Comparison of Pre/Post CTBS/IPT Test results in relationship to the artificial control group.

Pre/Post CTBS Test Score Results

The analysis of the pre/post test scores of the CTBS/IPT were utilized to compare the growth of the students during the intervention period with the national norm group. Figure 1 graphically displays the results. Table 4.5 lists the means of the same data numerically. The results show that the national norm group gained an average of eight to twelve points during the six-month period. The students in the after-school program increased their scores between 40 and 130 points during the same time.

Previous CTBS Test Results

The final use of the scores equated the students' previous results over the last five years. The comparison evaluated the scores to assess significant change regarding previous years' grade level ranking and NCEs (Appendices K-M). Figure 4.2 graphically illustrates the results.

According to the 1988 CTBS norms book, an average student was defined as one who scored within the fifth stanine with NCEs between 41-59 (p. 7). Twenty percent of the norm group (artificial control group) scored within this range. An NCE of 50 was used to define the average growth of students in grades one to five. This became the standard employed to measure the growth of the 30 Hispanic LEP fifth grade students to make comparisons of expected yearly growth.

In the first grade the Hispanic students average stanine was one, the NCE was one, and the GE was zero. The second grade stanine was two, the NCE average was six, and the GE was 1.0. The third grade stanine level was two, the NCE was eight, and the GE was 1.8. For the fourth grade, the stanine level was two, the NCE was three, the GE was 2.4. At the start of the fifth grade, the stanine level was three, the NCE level was 17, and the GE was 3.3 (Appendices K-M).

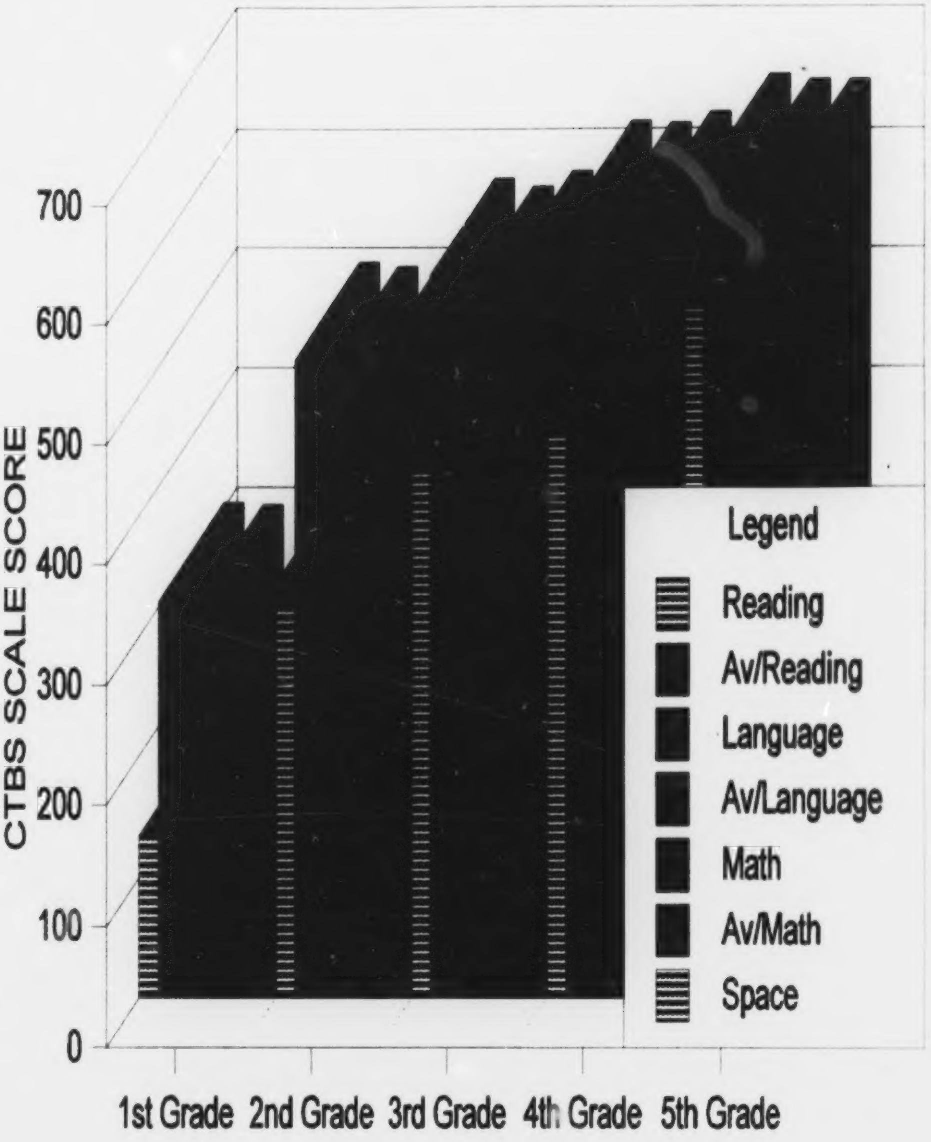

Figure 4.2. Comparison of academic growth in relationship to artificial control group during the first five years of

Table 4.5

Comparison of students in experimental program to national norm group (artificial control group)

Experimental Group Pre Test Scores					Months Below National	Control Group National Average			
	SC	STAN	NCE	GE	Average	SC	STAN	NCE	GE
RD	571	3	21	2.6	27-35	678-699	5	41-59	4.9-5.5
LG	609	2	14	3.3	12-27	676-691	5	41-59	4.9-5.8
MH	651	3	21	4.0	09-20	676-687	5	41-59	4.9-5.5
IPT	23					65			
Post Test Scores									
RD	702	5	48	5.6	00-10	690-717	5	41-59	5.2-6.4
LG	680	4	40	4.9	02-20	681-699	5	41-59	5.1-6.9
MH	699	6	64	6.5	0	684-695	5	41-59	5.3-6.2
IPT	55					70			

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw-Hill," 1988). "_Comprehension Test of Basic Skills Norms Book._"

Discussion

The task of data collection is predominantly one of rejecting inadequate hypotheses (Campbell and Stanley, 1963). In a fundamental sense, research never "confirm or prove" a hypothesis, rather the hypothesis escapes being disconfirmed . . . An adequate hypothesis is one that has repeatedly survived the disconfirming process (Campbell and Stanley, 1963, pp. 35-37).

The intent of the after-school program was designed to accelerate English language acquisition and academic learning by providing a highly contextualized environment (a dinosaur dig), utilizing constructionist theory along with instructional discourse and active teaching methods. These strategies were specifically chosen to help facilitate both BICS and CALP development for the LEP Hispanic fifth grade students. By implementing these strategies in a systematic fashion, the presumption was that the students would experience academic success and greater proficiency in English.

The success of the after-school program was measured by comparing data compiled on the IPT Form A (pretest), and the IPT Form B (Posttest), the CTBS Form U (pretest) and the CTBS Form V (posttest). The intervention has positively affected the 30 Hispanic LEP students. The t-test showed significant differences with all pre/post scores. This allowed the acceptance of the four hypotheses not only at the .05 levels of significance, but also at the .01 levels of significance.

In comparing the LEP students' academic growth from first to the fifth grade, the scores indicate significant gains in all areas tested. The students were 12-14 months below the national average in the first grade. In the second grade, it was 7-15 months. In the third grade, the students were 9-20 months behind the average. In the fourth grade, the students were 23-33 months behind the norm group. At the start of the fifth grade, the students were 27-35 months behind the national average on the CTBS.

The 30 LEP Hispanic fifth grade students who had participated in this research had been struggling academically for several years. After the six-month intervention, results indicate that the students made substantial gains and had attained the fifth stanine for the first time since entering school. All posttest results exhibited increased NCEs to levels between 40-64 (Table 4.5). The results of the previous CTBS scores (over the last five years) indicated that the students have had a consistent pattern of little or no academic growth.

Because of this intervention, the students were at or close to all grade level expectations. Subsequently,

> ...if several years of student activity can be looked at as a baseline measurement; and an intervention is implemented that compared new activity, behavior, or scores with previous activity, behavior, or scores, and there is a change, that change can be viewed as resulting from the activity introduced (Moore, 1993, p. 8).

Slavin's 1992 research indicated similar findings. "If no other major changes occurred during the same year, it is possible to argue that it was the program of improvement that made the difference" (Slavin, 1992 p. 35).

Next, Chapter V will summarize and list the important implications and recommendations that can be gained from this research.

CHAPTER V

Summary, Implications and Recommendations

Summary

The purpose of this research has been to evaluate an after-school program designed for Hispanic LEP fifth grade students who were doing poorly in school. Throughout the six-month after-school program, 70 LEP Hispanic fifth grade students participated in the program.

The instruction was designed to utilize a constructionist approach to teaching. This perspective allowed for the students' previous knowledge and experience to be a foundation for appropriating new knowledge. The students' beliefs and assumptions were discussed and innovative ideas were developed as new information was explored.

Instructional conversation was used to expand the concept of peer tutoring and student interaction. Lankard's 1992 research reports that greater student achievement result from collaborative learning environments.

The after-school program utilized a contextualized environment to improve academic achievement and understanding. It also placed the students in a low-stress atmosphere conducive to the interaction process in the classroom (Hamilton and Hanson, 1992). This approach allowed the instructor to closely monitor students' progress. It also provided a positive and immediate feedback system between the student and the instructor.

Active teaching attributes were employed that allowed the students to use their senses. It also required them to interact with each other collaboratively to solve problems that arose within the context of the dinosaur dig. The assumption of active teaching was that during student-student interactions, higher cognitive order thinking and linguistic skills would be employed.

Implications

To determine if the after-school program showed significant differences on student achievement in oral English, reading, language, and math, 30 LEP Hispanic fifth grade students were randomly chosen to be evaluated. Data from the IPT and CTBS test were collected and compared using pre/post test scores. A t-test was used to determine improvement.

Upon completion of the six-month implementation period, the results showed 100 percent, or 30 out of 30 students increased their scores on the IPT and CTBS.

The analysis of data supported Hypothesis One that there would be a significant increase in English oral language proficiency. The class average rose from 23.4 items correct to 55.1 items correct. The overall average gain of each student from the pretest to the posttest was 31.1.

The analysis of data supported Hypothesis Two that there would be a significant increase in reading comprehension. The class average rose from 571 items correct to 702 items correct. The overall average gain of each student from the pretest to the posttest was 131.4.

The analysis of data supported Hypothesis Three that there would be a significant increase in English language mechanics. The class average rose from 609 items correct to 681 items correct. The overall average gain of each student from the pretest to the posttest was 72.1.

The analysis of data supported Hypothesis Four that there would be a significant increase in total math scores. The class average rose from 651 items correct to 699 items correct. The overall average gain of each student from the pretest to the posttest was 48.9.

The analysis of data also demonstrated that the students in the after-school program increased their NCE and stanine levels at a much greater rate than those students in the norm (artificial control) group.

It can be concluded that the students improved significantly within the six-month period. Results in student achievement show substantial gains for all students who participated. Due to the success of the project, a recommendation was made to implement the program for all LEP students at all grade levels at the researcher's site. The bilingual supervisor of FUSD is aware of the study and attempts are being made to implement the intervention into other schools within the district.

Recommendations

Based on the findings of this study, the writer offers the following recommendations:

1. It is recommended that school personnel in administrative positions initiate pre-service and in-service workshops, seminars and other types of educational experiences designed to better acquaint teachers, administrators, and other

personnel with the educational needs and abilities of LEP students.

2. It is recommended that teacher-training institutions assume an aggressive leadership role in developing teacher preparation programs which will prepare teachers for multicultural school populations.
3. It is recommended that language learning programs such as the one proposed in this research-to accelerate English Language acquisition-be further developed, implemented, and evaluated.
4. It is recommended that the implementation of this style of program not be restricted to LEP students, but should be made available as an instructional and enrichment program for all students.
5. It is recommended that school personnel conduct a thorough assessment of curriculum structure and classroom materials so as to create culturally relevant programs of study.

Accordingly, language diversity in the classroom has presented many pedagogical questions. A school's first duty must be to help students acquire the language of the society in which they live. School programs that service LEP students need to make sure that students are given the opportunity to develop full proficiency in English. Therefore methods that involve intensive exposure to the sights, sounds, and activities in English are the most powerful (Chavez, 1991).

Furthermore, Hispanics are the fastest growing minority group in the United States. Chavez's (1991) study puts the number of Hispanics at more than 20 million; over one third are immigrants. If the children of these immigrants fail to master English, "the child will always be at an enormous disadvantage" (The National Council of Teachers of English, 1993, p. 14).

Moreover, the review of the professional literature clearly points out the importance of initiating second language learning programs at the elementary level that require the student's active involvement. This notion poses serious implications for teachers who instruct students classified as LEP.

The literature and the findings of this study seem to be in general agreement with respect to the importance of teachers examining their current strategies and practices, and compare these practices with what current researchers have to say about the best or most successful way to teach LEP students. After making these comparisons, the teacher can decide which is best to use in his/her specific instructional situation.

There are other implications that can be drawn from this study. First, to begin enabling students to gain communicative competence in instructional or classroom discourse, teachers need to understand their students' backgrounds or points of reference. The findings indicate the importance of understanding the students beyond stereotypes of what they understand, comprehend, or previous knowledge that they bring to class.

Background information gathered from classroom conversations and hands-on activities can be used effectively as a guide in the development of classroom themes and strategies that are student centered and motivate the student to learn more.

An added benefit of the strategies presented in this research is that it encourages the development of rapport and solidarity between the student and the teacher. This allows the instructor to handle students' questions in a positive and constructive way that further enhances the students' academic development.

Future replication studies need to be made involving more than two classrooms or more than one school. It is recommended that this study be replicated in other districts and in other areas where a larger sample of LEP students can be tested. By doing this, a more diverse group of teachers and students would be represented. Different grade levels (i.e., primary, middle and high school) could also be explored to see how these teaching strategies could help LEP students experience academic success. Students other than Hispanic need to be included in these larger studies to determine the interventions' effectiveness on other LEP groups. An experimental program using a control and an experimental group should also be utilized instead of a one group design with an artificial control group.

This study took place in a bilingual and bicultural setting with three teachers and two aides who came from diverse cultural experiences and backgrounds. However, the educational philosophies and interpretations about how students acquire a second language were agreed on by all involved. Because of this, the findings of this study cannot be generalized to all classrooms. Zarrillo's 1989 research found that effective and instructional delivery and style is a variable, among others, which really counts in influencing learner outcomes.

In conclusion, this research demonstrates effective strategies that can have a positive impact and produce significant academic gains for the LEP Hispanic student. It

, is the desire of this researcher that this study be used to influence and accelerate the revision of teaching methodologies that influence the way LEP students are taught. The strategies of this study can contribute insight into the L2 learning situations at both the theoretical and practical level and be implemented into a successful ESL model to be duplicated by other schools or districts with similar problems.

Thus, it has been demonstrated that as a result of the implementation of these intervention strategies, student academic achievement and oral English proficiency was higher than in previous years. This research provided solid answers to the effectiveness of a well-designed ESL program and offers strategies for specific changes that can take place in the public school curricula to stop the failure rate of Hispanic students before they enter high school. Finally, it is the author's desire that this research will greatly benefit language practitioners as it contributes to the understanding of second-language acquisition in theory and practice.

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Appendix A

Language Skills Checklist

1. Describes objects according
   to their characteristics:
   Colors: red, yellow, brown, blue
   pink, green, orange, gray, black
   Objects in environment: basket
   barn, star, movie, house, cup
   book, towel, shelf, light
2. Location: (concepts of)
   in front of, behind, underneath
   besides, inside, outside, on
3. Uses complete sentences in talking.
4. Identifies common objects:
   Body parts mouth, ear, cheek
   wrist, leg, ankle, shoulder
   Common animals rabbit, dog, cat
   bird, squirrel, hamster
   Farm animals horse, chicken, cow
   goat, sheep, cow
   Zoo animals lion, tiger, monkey
   elephant seal, bear
   giraffe, kangaroo, penguin

5. Listens with increasing attention span: tolerates longer or more complex stories presented by the teacher
6. Expresses self clearly and freely: speaks to teacher and others when needed, speaks intelligibly and audibly
7. Demonstrates understanding of stories by giving answers to questions
8. Demonstrates aural language by repeating or rephrasing directions
9. Orally identifies consonant blends.
10. Understands and uses prepositions across, after, before
    in front of, near, beside
    from__ to __, from, over
    between__ and __, between two__
11. Identifies all letters and sounds of the alphabet.
12. Identifies Pronouns
    Objective: you, her, us
    them, him, you
13. Understands Question forms:
    Where with transitive/intransitive

verbs

What object form

What did__ do?

What will __ do?

Is__? (adjective)

Are __?

Did __?

Who __?

Have__?

Has__?

Whom?

Whose?

What __made of?

What __doing

What __covered with

What kind of

Is it time for__

Is it time to__

14. Time word and phrase:

after a while

today

tomorrow

yesterday

this morning

this afternoon

tonight

after school

day after tomorrow

day before

now

soon

name of days/week/month

one day last week

by and by

Appendix B

Numerical Concepts Checklist

1. Recognizes and identifies shapes:
can name and diagram; circle, square
triangle, rectangle, diamond

2. Distinguishes comparative sizes
and quantities: smaller/larger
more/less, order/sequence

3. Associates numerals with quantities,
Associates oral number with appropriate
numerical symbol

4. Understands the concept of sets
and non-sets

5. Understands greater than/less
than and corresponding symbols

6. Understands place value of
positive and negative numbers

7. Understands fractions from whole to part.

8. Understands fractions and corresponding decimals.

Appendix C

Juniper Elementary School
2577 Juniper Street
Fontana, CA 92577

June 20, 1994

Dear Fifth Grade Parents:

During the first half of this year, I will be conducting a research study as part of my graduate school program. This study will take place from June to December. It will involve all students who chose to be a part of the after-school dinosaur dig.

This research will evaluate various teaching strategies dealing with helping bilingual students acquire academic skills at an accelerated rate.

Thank you for your cooperation.

Sincerely,

Rock Moore

Fifth Grade Teacher

Appendix D-1

Test Results on the CTBS Level B First Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
2.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
3.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0
4.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
5.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
6.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
7.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0
8.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
9.	140	0	75	1	1	0.0	278	262	255	5	41-59	1.0
10.	131	0	75	1	1	0.0	278	262	255	5	41-59	1.0
11.	140	0	75	1	1	0.0	278	262	255	5	41-59	1.0
12.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
13.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
14.	140	0	70	1	1	0.0	278	262	255	5	41-59	1.0
15.	131	0	79	1	1	0.0	278	262	255	5	41-59	1.0

(appendix continues)

RD = Reading Score LG = Language Score

STAN = Stanine Score MH = Math Score

NCE = National Curve Equivalent GE = Grade Equivalent

Appendix D-2

Test Results on the CTBS Level B First Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	135	0	66	1	1	0.0	278	262	255	5	41-59	1.0
17.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
18.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0
19.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
20.	131	0	66	1	1	0.0	278	262	255	5	41-59	1.0
21.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
22.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0
23.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0
24.	140	0	66	1	1	0.0	278	262	255	5	41-59	1.0
25.	131	0	75	1	1	0.0	278	262	255	5	41-59	1.0
26.	140	0	66	1	1	0.0	278	262	255	5	41-59	1.0
27.	135	0	70	1	1	0.0	278	262	255	5	41-59	1.0
28.	131	0	75	1	1	0.0	278	262	255	5	41-59	1.0
29.	145	0	66	1	1	0.0	278	262	255	5	41-59	1.0
30.	131	0	70	1	1	0.0	278	262	255	5	41-59	1.0

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix E-1

Test Results on the CTBS Level C Second Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	318	339	268	1	1	0.9	487	483	477	5	41-59	1.9
2.	318	339	268	1	1	0.9	487	483	477	5	41-59	1.9
3.	321	339	280	1	4	0.9	487	483	477	5	41-59	1.9
4.	318	342	293	1	7	1.0	487	483	477	5	41-59	1.9
5.	323	339	284	1	5	1.0	487	483	477	5	41-59	1.9
6.	318	345	293	1	7	1.0	487	483	477	5	41-59	1.9
7.	326	348	288	1	6	1.0	487	483	477	5	41-59	1.9
8.	318	339	284	1	5	1.0	487	483	477	5	41-59	1.9
9.	321	345	276	1	3	1.0	487	483	477	5	41-59	1.9
10.	321	324	276	1	3	1.0	487	483	477	5	41-59	1.9
11.	323	345	268	1	1	0.9	487	483	477	5	41-59	1.9
12.	323	348	293	1	7	1.0	487	483	477	5	41-59	1.9
13.	318	339	276	1	3	1.0	487	483	477	5	41-59	1.9
14.	328	350	284	1	5	1.0	487	483	477	5	41-59	1.9
15.	326	348	268	1	1	0.9	487	483	477	5	41-59	1.9

(appendix continues)

RD = Reading Score
LG = Language Score
STAN = Stanine Score
MH = Math Score
NCE = National Curve Equivalent
GE = Grade Equivalent

Appendix E-2

Test Results on the CTBS Level C Second Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	328	339	321	3	13	1.1	487	483	477	5	41-59	1.9
17.	334	342	293	2	7	1.0	487	483	477	5	41-59	1.9
18.	318	357	268	1	1	0.9	487	483	477	5	41-59	1.9
19.	336	350	311	3	11	1.1	487	483	477	5	41-59	1.9
20.	328	348	321	2	9	1.1	487	483	477	5	41-59	1.9
21.	323	350	302	2	9	1.1	487	483	477	5	41-59	1.9
22.	321	342	276	1	1	0.9	487	483	477	5	41-59	1.9
23.	331	345	302	2	9	1.1	487	483	477	5	41-59	1.9
24.	336	352	321	3	13	1.1	487	483	477	5	41-59	1.9
25.	340	345	326	3	14	1.1	487	483	477	5	41-59	1.9
26.	336	355	311	3	11	1.1	487	483	477	5	41-59	1.9
27.	331	339	297	2	8	1.0	487	483	477	5	41-59	1.9
28.	318	345	316	3	12	1.1	487	483	477	5	41-59	1.9
29.	323	348	321	3	13	1.1	487	483	477	5	41-59	1.9
30.	326	355	302	2	9	1.1	487	483	477	5	41-59	1.9

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix F-1

Test Results on the CTBS Level D Third Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	419	411	464	1	1	1.7	571	571	584	5	41-59	2.9
2.	424	421	467	1	2	1.7	571	571	584	5	41-59	2.9
3.	427	425	471	1	3	1.7	571	571	584	5	41-59	2.9
4.	421	419	478	2	5	1.7	571	571	584	5	41-59	2.9
5.	435	425	475	1	4	1.7	571	571	584	5	41-59	2.9
6.	442	407	471	1	3	1.5	571	571	584	5	41-59	2.9
7.	438	413	489	2	8	1.8	571	571	584	5	41-59	2.9
8.	442	433	501	3	11	1.9	571	571	584	5	41-59	2.9
9.	432	429	497	2	10	1.9	571	571	584	5	41-59	2.9
10.	430	421	493	2	9	1.8	571	571	584	5	41-59	2.9
11.	427	425	489	2	8	1.8	571	571	584	5	41-59	2.9
12.	435	416	482	2	6	1.8	571	571	584	5	41-59	2.9
13.	454	419	493	2	9	1.8	571	571	584	5	41-59	2.9
14.	451	413	504	3	12	1.9	571	571	584	5	41-59	2.9
15.	448	416	478	2	5	1.8	571	571	584	5	41-59	2.9

(appendix continues)

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix F-2

Test Results on the CTBS Level D Third Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	432	411	482	2	6	1.8	571	571	584	5	41-59	2.9
17.	430	413	478	2	5	1.8	571	571	584	5	41-59	2.9
18.	445	416	475	2	4	1.7	571	571	584	5	41-59	2.9
19.	419	407	464	1	1	1.7	571	571	584	5	41-59	2.9
20.	438	404	493	2	9	1.8	571	571	584	5	41-59	2.9
21.	430	411	501	3	11	1.9	571	571	584	5	41-59	2.9
22.	427	429	497	2	10	1.9	571	571	584	5	41-59	2.9
23.	445	441	507	3	13	1.9	571	571	584	5	41-59	2.9
24.	438	425	497	2	10	1.9	571	571	584	5	41-59	2.9
25.	430	437	493	2	9	1.8	571	571	584	5	41-59	2.9
26.	458	416	489	2	8	1.8	571	571	584	5	41-59	2.9
27.	451	425	501	3	11	1.9	571	571	584	5	41-59	2.9
28.	448	421	504	3	12	1.9	571	571	584	5	41-59	2.9
29.	462	429	514	3	15	2.0	571	571	584	5	41-59	2.9
30.	451	433	518	3	16	2.0	571	571	584	5	41-59	2.9

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix G-1

Test Results on the CTBS Level F Fourth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	456	483	562	1	1	1.6	615	621	637	5	41-59	3.9
2.	458	479	556	1	2	1.6	615	621	637	5	41-59	3.9
3.	456	479	529	1	1	1.6	615	621	637	5	41-59	3.9
4.	461	483	546	1	3	1.6	615	621	637	5	41-59	3.9
5.	464	485	556	1	4	1.6	615	621	637	5	41-59	3.9
6.	461	487	565	1	3	1.6	615	621	637	5	41-59	3.9
7.	458	473	568	1	2	1.6	615	621	637	5	41-59	3.9
8.	464	479	571	1	4	1.6	615	621	637	5	41-59	3.9
9.	466	490	565	2	5	1.6	615	621	637	5	41-59	3.9
10.	456	487	540	1	1	1.6	615	621	637	5	41-59	3.9
11.	464	485	559	1	4	1.6	615	621	637	5	41-59	3.9
12.	468	485	553	2	6	1.6	615	621	637	5	41-59	3.9
13.	471	476	559	2	7	1.7	615	621	637	5	41-59	3.9
14.	476	490	565	2	9	1.7	615	621	637	5	41-59	3.9
15.	479	492	559	2	10	1.7	615	621	637	5	41-59	3.9

(appendix continues)

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix G-2

Test Results on the CTBS Level F Fourth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	456	490	568	1	1	1.6	615	621	637	5	41-59	3.9
17.	461	483	562	1	3	1.6	615	621	637	5	41-59	3.9
18.	466	476	529	2	5	1.6	615	621	637	5	41-59	3.9
19.	456	498	549	1	1	1.6	615	621	637	5	41-59	3.9
20.	464	492	540	1	4	1.6	615	621	637	5	41-59	3.9
21.	471	483	559	2	7	1.7	615	621	637	5	41-59	3.9
22.	468	487	543	2	6	1.6	615	621	637	5	41-59	3.9
23.	473	495	568	2	8	1.7	615	621	637	5	41-59	3.9
24.	471	479	517	2	7	1.7	615	621	637	5	41-59	3.9
25.	468	485	531	2	6	1.6	615	621	637	5	41-59	3.9
26.	476	490	540	2	9	1.7	615	621	637	5	41-59	3.9
27.	471	479	547	2	7	1.7	615	621	637	5	41-59	3.9
28.	468	483	568	2	6	1.6	615	621	637	5	41-59	3.9
29.	476	473	563	2	9	1.7	615	621	637	5	41-59	3.9
30.	466	498	559	2	5	1.7	615	621	637	5	41-59	3.9

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix H-1

Pretest Results on the CTBS Level G-U Fifth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	527	636	650	2	10	2.0	678	676	676	5	41-59	4.9
2.	527	616	668	2	10	2.0	678	676	676	5	41-59	4.9
3.	566	629	687	3	21	2.5	678	676	676	5	41-59	4.9
4.	530	583	658	3	11	2.1	678	676	676	5	41-59	4.9
5.	562	661	690	3	20	2.4	678	676	676	5	41-59	4.9
6.	527	569	622	2	10	2.0	678	676	676	5	41-59	4.9
7.	557	608	584	3	19	2.4	678	676	676	5	41-59	4.9
8.	561	575	663	3	20	2.4	678	676	676	5	41-59	4.9
9.	527	560	610	2	10	2.0	678	676	676	5	41-59	4.9
10.	543	621	551	3	15	2.2	678	676	676	5	41-59	4.9
11.	557	536	584	3	19	2.4	678	676	676	5	41-59	4.9
12.	566	625	685	3	21	2.5	678	676	676	5	41-59	4.9
13.	527	545	626	2	10	2.0	678	676	676	5	41-59	4.9
14.	562	620	686	3	20	2.4	678	676	676	5	41-59	4.9
15.	546	536	621	3	16	2.2	678	676	676	5	41-59	4.9

(appendix continues)

RD = Reading Score
LG = Language Score
STAN = Stanine Score
MH = Math Score
NCE = National Curve Equivalent
GE = Grade Equivalent

Appendix H-2

Pretest Results on the CTBS Level G-U Fifth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	601	595	618	4	28	3.0	678	676	676	5	41-59	4.9
17.	566	575	639	3	21	2.5	678	676	676	5	41-59	4.9
18.	562	620	686	3	20	2.4	678	676	676	5	41-59	4.9
19.	570	575	687	3	21	2.5	678	676	676	5	41-59	4.9
20.	588	635	686	3	25	2.8	678	676	676	5	41-59	4.9
21.	646	659	613	4	38	4.1	678	676	676	5	41-59	4.9
22.	570	629	687	3	21	2.5	678	676	676	5	41-59	4.9
23.	640	680	706	4	37	3.9	678	676	676	5	41-59	4.9
24.	588	639	653	3	25	2.8	678	676	676	5	41-59	4.9
25.	574	575	620	3	22	2.6	678	676	676	5	41-59	4.9
26.	629	610	684	4	34	3.6	678	676	676	5	41-59	4.9
27.	582	536	605	3	24	2.8	678	676	676	5	41-59	4.9
28.	627	638	675	4	34	3.6	678	676	676	5	41-59	4.9
29.	579	690	675	4	23	2.7	678	676	676	5	41-59	4.9
30.	624	684	696	4	33	3.6	678	676	676	5	41-59	4.9

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix I-1

Posttest Results on the CTBS Level G-V Fifth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
1.	646	656	696	4	38	4.1	700	688	687	5	41-59	5.5
2.	647	698	695	4	39	4.1	700	688	687	5	41-59	5.5
3.	707	675	708	5	58	5.8	700	688	687	5	41-59	5.5
4.	659	575	688	5	42	4.4	700	688	687	5	41-59	5.5
5.	688	700	715	5	50	5.2	700	688	687	5	41-59	5.5
6.	650	684	704	4	39	4.2	700	688	687	5	41-59	5.5
7.	677	659	655	5	47	4.8	700	688	687	5	41-59	5.5
8.	686	667	678	5	50	5.1	700	688	687	5	41-59	5.5
9.	650	592	666	4	39	4.2	700	688	687	5	41-59	5.5
10.	671	646	599	5	45	4.7	700	688	687	5	41-59	5.5
11.	683	656	662	5	49	5.0	700	688	687	5	41-59	5.5
12.	697	691	732	5	54	5.4	700	688	687	5	41-59	5.5
13.	659	662	682	5	42	4.4	700	688	687	5	41-59	5.5
14.	689	706	721	5	51	5.2	700	688	687	5	41-59	5.5
15.	676	575	698	5	46	4.8	700	688	687	5	41-59	5.5

(appendix continues)

RD = Reading Score

LG = Language Score

STAN = Stanine Score

MH = Math Score

NCE = National Curve Equivalent

GE = Grade Equivalent

Appendix I-2

Posttest Results on the CTBS Level G-V Fifth Grade

							Average					
	RD	LG	MH	STA	NCE	GE	RD	LG	MH	STA	NCE	GE
16.	736	707	707	6	61	7.7	700	688	687	5	41-59	5.5
17.	707	752	688	5	61	7.7	700	688	687	5	41-59	5.5
18.	689	706	721	5	61	7.6	700	688	687	5	41-59	5.5
19.	709	716	732	5	67	8.7	700	688	687	5	41-59	5.5
20.	724	720	716	6	70	9.1	700	688	687	5	41-59	5.5
21.	802	754	684	8	90	9.9	700	688	687	5	41-59	5.5
22.	714	754	721	8	90	9.9	700	688	687	5	41-59	5.5
23.	783	755	781	8	90	9.9	700	688	687	5	41-59	5.5
24.	723	684	730	5	48	5.2	700	688	687	5	41-59	5.5
25.	714	707	696	6	62	8.3	700	688	687	5	41-59	5.5
26.	767	707	748	6	62	8.3	700	688	687	5	41-59	5.5
27.	721	536	610	3	22	3.1	700	688	687	5	41-59	5.5
28.	741	673	699	5	43	4.8	700	688	687	5	41-59	5.5
29.	718	701	732	5	58	7.1	700	688	687	5	41-59	5.5
30.	739	710	717	6	63	8.0	700	688	687	5	41-59	5.5

Note. From "Fontana Bilingual Assessment Center," 1995.

RD = Reading Score LG = Language Score

STAN = Stanine Score MH = Math Score

NCE = National Curve Equivalent GE = Grade Equivalent

Appendix J

Pre/Post Test Results of the IPT

	Pre IPT	Post IPT	Des.		Pre IPT	Post IPT	Des.
1.	27	59	LEP	16.	16	47	LEP
2.	13	47	LEP	17.	18	51	LEP
3.	11	49	LEP	18.	19	50	LEP
4.	19	54	LEP	19.	30	49	LEP
5.	52	65	FEP	20.	27	55	LEP
6.	30	48	LEP	21.	17	44	LEP
7.	6	47	LEP	22.	17	52	LEP
8.	48	70	FEP	23.	11	40	LEP
9.	30	62	FEP	24.	19	47	LEP
10.	20	61	FEP	25.	20	49	LEP
11.	19	56	LEP	26.	30	66	LEP
12.	11	47	LEP	27.	45	77	LEP
13.	17	55	LEP	28.	10	44	LEP
14.	17	67	LEP	29.	32	60	LEP
15.	27	61	LEP	30.	44	75	FEP

Note. From "Fontana Bilingual Assessment Center," 1995.

Pre IPT Scores Post IPT Scores

LEP = Limited English Proficient

FEP = Fluent English Proficient

Appendix K

Comparison of Experimental Group and Norm (Artificial Control) Group on the CTBS Reading Scores Grades 1-5

EXPERIMENTAL GROUP					MONTHS BELOW NATIONAL AVERAGE	CONTROL GROUP NATIONAL AVERAGE			
GRADE	RD	STAN	NCE	GE		RD	STAN	NCE	GE
1st	134	1	2	0	12-14	278-352	5	41-59	1.0-1.2
2nd	324	1	3	0	12-27	480-543	5	41-59	1.8-2.3
3rd	438	2	7.9	1.8	09-20	571-616	5	41-59	2.5-3.4
4th	466	1.5	4.9	1.6	23-33	630-661	5	41-59	3.7-4.5
5th	571	3.1	21	2.6	27-35	678-699	5	41-59	4.9-5.5

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

RD = Reading test results of the CTBS

NCE = National curve equivilent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

Appendix L

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS Language Scores Grades 1-5

EXPERIMENTAL GROUP					MONTHS BELOW	CONTROL GROUP			
GRADE	LG	STAN	NCE	GE	NATIONAL	NATIONAL AVERAGE			
					AVERAGE	LG	STAN	NCE	GE
1st	000	1	1	0	12-14	262-348	5	41-59	1.0-1.2
2nd	345	2	3	1.0	07-15	487-541	5	41-59	1.7-2.3
3rd	420	2	7.9	1.8	09-20	571-608	5	41-59	2.6-3.4
4th	466	1.5	4.9	1.6	23-33	630-661	5	41-59	3.7-4.5
5th	609	3.1	21	2.6	27-35	676-691	5	41-59	4.9-5.8

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

LG = Language test results of the CTBS

NCE = National curve equivilent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

Appendix M

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS Math Scores Grades 1-5

EXPERIMENTAL GROUP					MONTHS BELOW NATIONAL AVERAGE	CONTROL GROUP NATIONAL AVERAGE			
GRADE	MH	STAN	NCE	GE		MH	STAN	NCE	GE
1st	69.8	1	1	0	12-14	255-317	5	41-59	1.0-1.2
2nd	293	2	6	1.0	08-15	477-542	5	41-59	1.8-2.3
3rd	489	2	7.9	1.8	11-18	584-616	5	41-59	2.7-3.2
4th	553	1.5	4.9	1.6	24-33	634-661	5	41-59	3.6-4.3
5th	651	3.1	21	2.6	27-35	676-687	5	41-59	4.9-5.5

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

MH = Math results of the CTBS

NCE = National curve equivilent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

Appendix N

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS - Beginning of the 5th Grade to the Middle of the 5th Grade

EXPERIMENTAL GROUP PRE TEST SCORES					MONTHS BELOW NATIONAL AVERAGE	CONTROL GROUP NATIONAL AVERAGE			
	SC	STAN	NCE	GE		SC	STAN	NCE	GE
RD	571	8	21	2.6	27-35	678-699	5	41-59	4.9-5.5
LG	609	2	14	3.3	12-27	676-691	5	41-59	4.9-5.8
MH	651	3	29	4.0	09-20	676-687	5	41-59	4.9-5.5
POST TEST SCORES									
RD	702	5	48	5.6	00-10	690-717	5	41-59	5.2-6.4
LG	680	4	40	4.9	23-33	681-699	5	41-59	5.1-6.9
MH	699	6	64	6.5	0	684-695	5	41-59	5.3-6.2

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norm sample

NCE = National curve equivilent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed average GE score

Appendix O

Brief Overview of the After-School Activities Using a Dinosaur Dig to Create A Contextualized Environment

1. Setting the stage. Set up an archaeology center in the classroom. Gather available resources: tradebooks, magazines, maps, atlases, film strips, etc. Show Indiana Jones video "Raiders of the Lost Ark." Show movie in small segments to explain aspects of archaeology and vocabulary.

2. Utilize daily reading and journalizing activities that show comprehension and language acquisition.

3. Detectives of the past. Students need to be trained on how the actual dig will be done in the class. Show film strip on Stonehenge, Egyptian Pyramids, ancient writing, etc.

4. Explain natural forces that destroy artifacts like bacteria, fungi, rain, wind, erosion, etc.

5. Burials and bodies. Discuss the importance of looking at skeletons and graves. Explain about articles that have been found in graves like pottery, plants, food, clothing, tools, weapons, etc.

6. Talk about what these items tell about the time period in which they were used.

7. Putting it together. Have students discuss how all these pieces of information become parts of a puzzle to

explain the past. Have students make clay (flour and cornstarch) to make plates and cups. Have students make stalactite style cave drawings.

8. Have students identify ten different items that they can discover about a penny.

9. Explain different alphabet system or the use of pictographs. Have students decode them. Practice writing secret messages.

10. Preparing for the dig. Take students to a dig sight. (Class went to Brea Tar Pits). Discussion and rules of dig need to be explained in detail.

11. Pair students up. Teach/reinforce responsibility.

12. Actual dig. Swimming pools need to be separate from writing, weighing, and measuring areas.

13. Establish the importance of writing everything as it is discovered. Location, size, shape, etc.

14. Explain/demonstrate how to use a triple beam scale, how to measure, tag, and place each item as it is located.

15. Dividing the dig (teaching concept of graphing). Have students figure out how they can conduct the dig in a logical manner (pie shaped using the compass rose for directions).

16. Conducting the dig. When pools have been divided, students have been paired and they have learned to write as

they discover/observe in their journals, allow them to start the dig. (a) Use paint brushes only to sweep the dirt in area that they are assigned. (b) When any item is located, pair stops digging, log location in journal, remove sand from around it, item cannot be pulled out, it must be carefully removed. (c) Item is then weighed, measured, tagged, and put on the discovery table. (d) Only when all these task are accomplished can that specific pair resume digging for the next item.

17. Items were buried in the pool in stages. First metal and rocks were put in the sand. As the students became accustomed to finding those items shells and fossils were buried. After several weeks dinosaur bones started to be discovered. (The dinosaur was about eight feet long and three feet wide. The bones were made out of plywood).

18. When all of the items were removed from the sand, the students had to figure out what king of dinosaur they had found and how it was to be put together. There were various dinosaur pictures and skeletons that the students looked at to try and decide how the dinosaur would look when finished.

19. As a final activity, the students went on another field trip to a local university to talk to an archaeologist.